Vol. 936 Number 1

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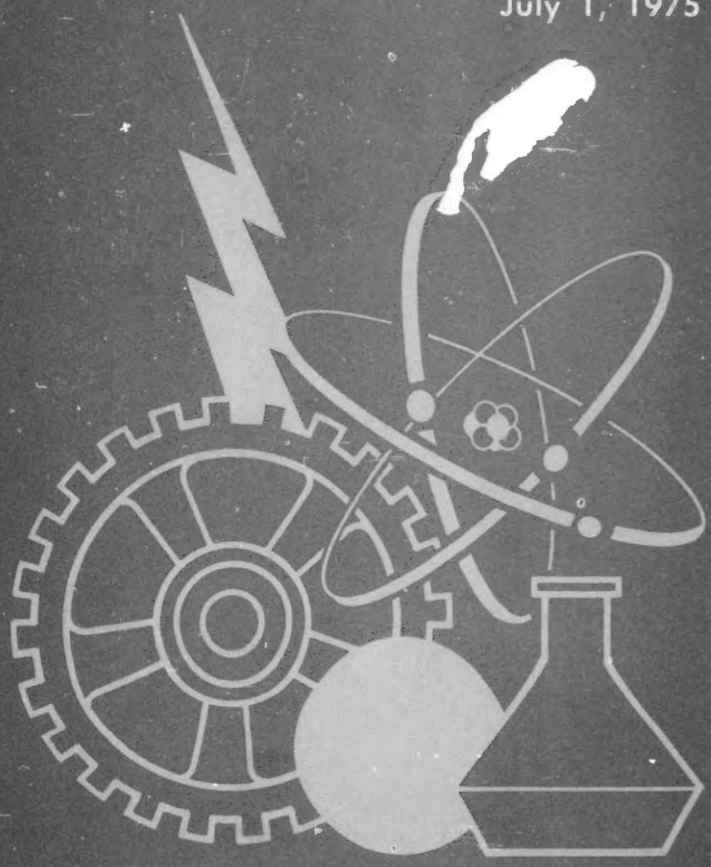

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July 1, 1975 Volume 936 Number 1

CONTENTS

	Page
Patent and Trademark Notices	
Board of Appeals Decisions	2
Patent Suits	2
Patent Notices	
Certificates of Correction for the Week of July 1, 1975	4
Disclaimer and Dedication	4
Dedications	4
Disclaimers	4
Condition of Patent Applications	6
Defensive Publications (936,001)	7
Reissue Patents Granted (28,455)	9
Plant Patents Granted (3,736)	12
Patents Granted	
General and Mechanical (3,891,996)	13
Chemical (3,892,521)	187
Electrical (3,892,910)	287
Design Patents Granted (235,589)	383
Index of Patentees	PI
Indices of Applicants of Defensive Publications, Reissues, Plants and Designs	PI 38
Classification of	
Patents (Including Reissues)	PI 41
Designs, Plants and Defensive Publications	PI 44
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 45
Designs, Plants and Applicants of Defensive Publications	PI 47

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PATENT AND TRADEMARK OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of May 1975

Examiner affirmed	230
Examiner affirmed in part	57
Examiner reversed	81
Total	368

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,601,104, A. Douglas, JET PROPULSION AND CONTROL MEANS THEREFOR, **filed** June 17, 1970 (District of Columbia), Court of Claims, Doc. 197–70, *Aubrey E. Douglas* v. *The United States.* Claim 1 held invalid under 35 U.S.C. 103 because of obviousness over the prior art.

2,915,315, J. Rabinow, SERVO ARM FOR PHONOGRAPH PICKUPS, **filed** Jan. 30, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c313, *Harman-Kardon Inc.* v. *Bang & Olufsen of America Inc.*

2,950,775, R. E. Zwayer, EXHAUST NOISE REDUCING AND AIR DIFFUSING MEANS FOR PNEUMATIC MOTORS, **filed** Feb. 2, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c414, *Aro Corporation* v. *Allied Witan Co. and Norman Engineering Co.* Consent judgment, complaint dismissed, counterclaim dismissed, by the Northern District of Ohio, Eastern Division Case No. C–71–468, case received by transfer, Mar. 25, 1974. **Same, filed** Jan. 30, 1975, D.C., N.D. Ohio (Toledo), Doc. C–71–468, *Aro Corporation* v. *Allied Witan Co. and Norman Engineering Co.* Defendants enjoined from not complying with the terms of the settlement agreement. Complaint and counterclaim dismissed, Feb. 5, 1975.

2,724,720, Berger, Ludwig, DICARBOMATES OF SUBSTITUTED PROPANE DIOLS, **filed** Jan. 30, 1975, D.C.N.J. (Newark), Doc. 75–158, *Purepac Pharmaceutical Co.* v. *Carter-Wallace, Inc.*

2,954,814, H. Covy, METHOD AND APPARATUS FOR STRAIGHTENING METALLIC ARROWS AND THE LIKE, **filed** Jan. 24, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–168 SAW, *Norman E. Conn and Ethel Conn* v. *Gerald A. Dion and Startec Corporation.*

2,989,837, A. W. Vibber, TWISTING SPINDLE BALLOON CONTROL, **filed** Feb. 3, 1975, D.C.N.J. (Newark), Doc. 75–174, *Alfred W. Vibber* v. *Uniroyal Inc.*

2,993,479, J. Thurley, FLUID HEATERS; **3,265,113,** Thurley, Lowry, GAS BURNER APPARATUS, **filed** Nov. 22, 1974, D.C., W.D. Okla (Oklahoma City), Doc. 74–1004–C, *Black, Sivalls & Bryson Inc.* v. *Keystone Steel Fabrication, Inc. et al.*

3,004,422, R. M. Starrett, KEY HOLDER, **filed** Dec. 13, 1971, D.C., S.D.N.Y., Doc. 71–C–5423, *Swank Inc.* v. *New York Merchandise Co., Inc.* Filed stipulation and order that action is dismissed with prejudice and without costs, Jan. 31, 1975.

3,022,012, Sharp, Streeter, PARTIAL CIRCLE WATER SPRINKLERS, **filed** May 30, 1974, D.C. Ohio (Cincinnati), Doc. C1 74–209, *Rain Bird Sprinkler Mfg. Corp.* v. *John S. Greeno Co., doing business as Skinner Irrigation Company.*

3,032,044, A. L. Pansini, AUTOMATIC SWIMMING POOL CLEANER, **filed** Jan. 22, 1975, D.C., N.D. Calif. (San Francisco), Doc. C–75–0150 WHO, *Airwick Industries Inc.* v. *Arneson Products Inc. and Andrew L. Pansini.*

3,078,052, Olds, Baker, CONDUCTOR WRAPPING DEVICE; **3,143,307,** Baker, CONDUCTOR WRAPPING BIT, **filed** June 28, 1974, D.C., S.D.N.Y., Doc. 74–C–2813, *Gardner Denver Co.* v. *O.K. Machine & Tool Corporation.* Dismissal under Rule 41(a), Nov. 19, 1974.

3,102,875, H. L. Heiss, POLYARETHANE REACTION PRODUCT AND METHOD FOR MAKING SAME, **filed** Mar. 26, 1968, D.C., S.D.N.Y., Doc. 68–C–1227, *The General Tire & Rubber Company* v. *Jefferson Chemical Company, Inc.* Patent invalid as to Claims 3, 4, 5, 6, 8, 9, 10, and 11, defendant's counterclaim is dismissed, Nov. 9, 1973.

3,143,307. (See 3,078,052.)

3,159,916, L. Hunter, VEHICLE WHEEL ALIGNMENT APPARATUS; **3,206,862,** same, **filed** Oct. 22, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c3030, *Lee Hunter and Hunter Engineering* v. *FMC Corporation.*

3,165,215, R. W. Larson, HEEL BOOM LOG GRAPPLING APPARATUS, **filed** Jan. 28, 1975, D.C. Oreg. (Portland), Doc. C–75–80, *Dico Company Inc.* v. *Savage Enterprises Inc.*

3,206,862. (See 3,159,916.)

3,241,876, W. S. Saunders, APPARATUS FOR REDUCING LINEAR AND LATERAL WIND RESISTANCE IN A TRACTOR-TRAILER COMBINATION VEHICLE; **3,309,131,** same, MEANS FOR REDUCING LINEAR WIND RESISTANCE IN SINGLE CHASSIS TYPE VEHICLES, **filed** Feb. 5, 1975, D.C., N.D. Ala. (Birmingham), Doc. CA 75–G–0143–S, *W. Selden Saunders and Rudkin-Wiley Corporation* v. *Avondale Mills and W. W. Murphree.*

3,259,157, E. E. Runnion, PRODUCTION OF DIMENSIONAL LUMBER FROM SMALL-DIAMETER LOGS; **3,344,826,** L. A. Mitten, PRODUCTION OF PULP CHIPS AND STUD LUMBER FROM PEELER CORES, **filed** Apr. 7, 1969, D.C., S.D. Idaho (Boise), Doc. C–1–69–28, *Ernest E. Runnion et al.* v. *Adco West Machinery Manufacturing, Inc.* Stipulation and order of dismissal, Jan. 24, 1975.

3,265,113. (See 2,993,479.)

3,305,273, J. Kilbourne, MINING APPARATUS SUPPORTING AND DRIVING CONSTRUCTION, **filed** Jan. 26, 1972, D.C., W.D. Pa. (Pittsburgh), Doc. 72–77, *National Mine Service Company* v. *Jeffrey Galion Inc.* Stipulation of counsel and order of court dismissing case without prejudice, Feb. 3, 1975.

3,309,131. (See 3,241,876.)

3,312,124, Meier, Meier, STEERING-WHEEL ASSEMBLY FOR AUTOMOTIVE VEHICLES, **filed** Feb. 5, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75–381–F, *Kamei-Autokomfort and Superior Industries, Inc.* v. *American Racing Equipment.*

3,344,826. (See 3,259,157.)

3,605,366, G. W. Zakim, COMPOSITE LAMINATE PANEL CONSTRUCTION, **filed** Feb. 3, 1975, D.C.N.J. (Camden), Doc. 75–0178, *Gerald Zakim* v. *Formigli Corporation.*

3,606,258, J. C. Fitch, ENERGY ABSORBING DECELERATION BARRIERS, **filed** Jan. 27, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c277, *Fibco Inc.* v. *Energy Absorption Systems, Inc.*

3,622,364, Sugahara, Miyazawa, Nakazawa and Masahiro, COLOR FORMER FOR PRESSURE SENSITIVE RECORDING PAPER AND PROCESS FOR PRODUCING SAME; **3,753,761,** same, PRESSURE SENSITICE RECORDING PAPER, **filed** Feb. 11, 1975, D.C., W.D.N.Y. (Buffalo), Doc. C–75–67, *Mizusawa Hagaku Kogyo Kabushiki Kaisha* v. *Moore Business Forms, Inc.*

3,640,310, G. Ehrlich, MULTIPORT VALVE, **filed** Nov. 11, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74–3328–EC, *Hayward Manufacturing Co., Inc.* v. *KDI American Products.*

3,680,560, Pannier, Reynolds, Sorenson, VACUUM DRAINAGE COLLECTION APPARATUS WITH DISPOSABLE LINER, **filed** Oct. 9, 1973, D.C., W.D. Okla. (Oklahoma City), Doc. 73–680–C, *Sorenson Research Co., Inc.* v. *Deaton Medical Company.* Differences compromised, defendants enjoined from making, using or selling any other apparatus which infringes U.S. patent other than "Deaton Device." Judgment subject to continued supervision of court, cause dismissed, Sept. 20, 1974.

3,696,323, R. J. Kinkaid, DIP HEADER, **filed** Apr. 16, 1973, D.C., S.D.N.Y., Doc. 73–1682, *AMP Incorporated* v. *Industrial Electronic Hardware Corp.* Filed order of dismissal on consent, without prejudice, July 3, 1974.

3,709,752, Wisotzky, Petersen, SUEDE-LIKE PLASTIC MATERIAL AND METHOD OF MAKING SAME, **filed** Jan. 31, 1975, D.C. Conn. (Hartford), Doc. H–75–40, *Pandel-Bradford, Inc.* v. *Pervel Industries Inc., and Timothy F. O'Keefe, Jr. and Walter Yeager.*

3,751,722, P. Richman, MOS INTEGRATED CIRCUIT WITH SUBSTRATE CONTAINING SELECTIVELY FORMED RESISTIVITY REGIONS; **3,806,741,** F. J. Smith, SELF-BIASING TECHNIQUE FOR MOS SUBSTRATE VOLTAGE, **filed** June 5, 1974, D.C., S.D.N.Y., Doc. 74–C–2430 LFM, *Standard Microsystems Corp.* v. *American Micro Systems Inc.*, Stipulation and order of dismissal of Patent No. 3,751,722 on Feb. 7, 1975. Stipulation and order of dismissal of Patent No. 3,806,741, on Dec. 18, 1974.

3,753,761. (See 3,622,364.)

3,785,391, B. C. Miller, SEQUENCING VALVE, **filed** Feb. 4, 1975, D.C., S.D. Fla. (Fort Lauderdale), Doc. (FL) 75–60–C–NCR, *Fimco Manufacturing, Inc.* v. *Bob C. Miller.*

3,806,741. (See 3,751,722.)

3,850,806, H. K. Cohen, FILTER AND WATER RECIRCULATION SYSTEM, **filed** Nov. 5, 1974, D.C., C.D. Calif. (Los Angeles), Doc. C–74–3191 RJK, *Nektonics Research & Development Co., Ltd.* v. *Trico Aquarium Products and Stanley Josephs.*

Re. 24,659, E. H. Clark, Jr., VARIABLE ORIFICE CASING FILLING APPARATUS, **filed** Jan. 29, 1975, D.C., C.D. Calif. (Los Angeles), Doc. 75–295–RJK, *Baker Oil Tools Inc.* v. *B & W Inc.*

D. 206,758, E. E. Radtke, SUPPORT MEMBER FOR A CUTTING BOARD OR THE LIKE, **filed** Jan. 29, 1975, D.C., S.D. Calif. (San Diego), Doc. 75–0056–T, *Terry Craft Enterprises, Inc.* v. *Physical Aids Manufacturing Company and Simon Gaines.*

Certificates of Correction for the Week of July 1, 1975

D. 234,039	3,843,830	3,864,466	3,873,357
D. 234,590	3,845,174	3,864,539	3,873,358
3,239,370	3,845,747	3,864,716	3,873,360
3,597,727	3,846,115	3,864,759	3,873,418
3,605,418	3,846,802	3,864,924	3,873,523
3,622,867	3,847,836	3,865,050	3,873,724
3,646,033	3,847,917	3,865,254	3,873,728
3,647,203	3,848,278	3,865,314	3,873,733
3,700,865	3,848,663	3,865,493	3,873,750
3,718,868	3,849,156	3,865,570	3,874,097
3,721,797	3,849,547	3,865,728	3,874,376
3,740,838	3,849,576	3,866,314	3,874,411
3,742,955	3,849,604	3,866,391	3,874,522
3,755,287	3,850,706	3,866,538	3,874,645
3,759,194	3,851,463	3,866,695	3,874,896
3,761,496	3,852,347	3,866,749	3,874,940
3,765,546	3,852,408	3,866,807	3,874,963
3,768,837	3,852,619	3,867,054	3,874,996
3,771,576	3,853,609	3,867,379	3,875,012
3,772,018	3,854,447	3,867,776	3,875,020
3,772,979	3,854,525	3,868,261	3,875,119
3,788,828	3,855,735	3,868,327	3,875,139
3,796,588	3,856,131	3,868,599	3,875,218
3,796,691	3,856,167	3,868,789	3,875,323
3,797,998	3,856,248	3,868,810	3,875,501
3,801,835	3,856,542	3,868,821	3,875,544
3,802,184	3,857,771	3,868,889	3,875,685
3,802,470	3,857,800	3,868,901	3,876,112
3,802,848	3,857,850	3,868,970	3,876,165
3,808,652	3,858,432	3,869,080	3,876,307
3,816,082	3,858,642	3,869,095	3,876,311
3,817,269	3,859,020	3,869,456	3,876,361
3,820,125	3,859,444	3,869,464	3,876,363
3,820,132	3,859,892	3,869,488	3,876,378
3,820,730	3,860,613	3,869,560	3,876,720
3,821,181	3,860,645	3,869,569	3,876,763
3,821,371	3,861,301	3,869,577	3,876,778
3,822,580	3,861,336	3,869,785	3,876,920
3,825,529	3,861,344	3,870,713	3,877,820
3,828,080	3,861,452	3,870,738	3,878,038
3,828,224	3,861,529	3,870,931	3,878,312
3,830,738	3,861,794	3,871,081	3,878,437
3,831,105	3,862,194	3,871,168	3,878,855
3,831,333	3,862,347	3,871,332	3,878,963
3,832,131	3,863,228	3,871,392	3,879,233
3,833,046	3,863,233	3,871,428	3,879,506
3,836,652	3,863,467	3,871,571	3,879,554
3,838,794	3,864,220	3,872,723	3,880,553
3,839,485	3,864,291	3,872,834	
3,840,845	3,864,304	3,872,912	
3,843,575	3,864,420	3,873,211	

Disclaimer and Dedication

D. 222,763.—*Robert A. Padmore*, Dunmore, Pa. LACE TABLE CLOTH. Patent dated Dec. 21, 1971. Disclaimer and dedication filed Mar. 17, 1975, by the assignee, *The Scranton Corporation*.

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Dedications

PP. 3,183.—*Walter H. Jessel, Jr.*, Doylestown, and *William E. Duffett*, Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated May 23, 1972. Dedication filed Feb. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

PP. 3,184.—*Walter H. Jessel, Jr.*, Doylestown and *William E. Duffett*, Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated May 23, 1972. Dedication filed Feb. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

PP. 3,212.—*Walter H. Jessel, Jr.*, Doylestown, and *William E. Duffett*, Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated June 20, 1972. Dedication filed Feb. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

PP. 3,216.—*Walter H. Jessel, Jr.*, Doylestown, and *William E. Duffett*, Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated June 20, 1972. Dedication filed Feb. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

PP. 3,248.—*Walter H. Jessel, Jr.*, Doylestown, and *William E. Duffett*, Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated Aug. 1, 1972. Dedication filed Feb. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

PP. 3,262.—*Walter H. Jessel, Jr.*, Doylestown, and *William E. Duffett*, Akron, Ohio. CHRYSANTHEMUM PLANT. Patent dated Dec. 5, 1972. Dedication filed Feg. 6, 1975, by the assignee, *Yoder Brothers, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,510,436.—*Ronald M. Silverstein*, Parsippany, N.J., *Chester A. Bishof*, North Hills, and *Joseph T. Matey*, Levittown, Pa. CORROSION INHIBITION IN WATER SYSTEM. Patent dated May 5, 1970. Dedication filed Nov. 4, 1974, by the assignee, *Betz Laboratories, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimers

3,602,897.—*John J. Igel, Rochestér*, and *Myron D. Schettl*, Oronoco, Minn. KEY-ENTRY SYSTEM. Patent dated Aug. 31, 1971. Disclaimer filed July 1, 1974, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to claim 4 of said patent.

3,654,244.—*Allen G. Pittman*, El Cerrito, and *William L. Wasley*, Berkeley, Calif. POLYMERS FOR SOIL-RELEASE TEXTILE FINISHES. Patent dated Apr. 4, 1972. Disclaimer filed Nov. 3, 1973, by the assignee, *United States of America as represented by the Secretary of Agriculture*.

Hereby enters this disclaimer to claims 1–27 of said patent.

3,732,398.—*James F. Pease*, Dayton, Ohio. ELECTRICAL HEATING ELEMENT AND FITTING ASSEMBLY. Patent dated May 8, 1973. Disclaimer filed June 19, 1974, by the inventor.

Hereby disclaims the term of the patent subsequent to April 18, 1989.

3,774,089.—*Howard B. Lewis*, La Canada, Calif. TEMPERATURE INDICATING APPARATUS USING OPPOSITELY VARYING CAPACITORS. Patent dated Nov. 20, 1973. Disclaimer filed June 27, 1974, by the assignee, *Bell & Howell Company*.

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,775,628.—*Anders R. Anderson, Anders Bjorklund,* and *Lars-Goran Virsberg,* Vasteras, Sweden. INSULATED COIL FOR ARRANGEMENT IN A SLOT IN THE STATOR OR ROTOR OF AN ELECTRIC MACHINE. Patent dated Nov. 27, 1973. Disclaimer filed Mar. 26, 1974, by the assignee, *Allmanna Svenska Elektriska Aktiebolaget.*

Hereby disclaims the term of the patent subsequent to March 27, 1990.

3,777,249.—*Christ J. Dumas,* Forest View, Ill. MULTIPLIER ASSEMBLY. Patent dated Dec. 4, 1973. Disclaimer filed April 29, 1974, by the assignee, *American Plasticraft Company.*

Hereby disclaims the term of the patent subsequent to Nov. 6, 1990.

3,777,582.—*Peter Robert Durdin,* New Malden, England. TIME SWITCHES. Patent dated Dec. 11, 1973. Disclaimer filed Nov. 25, 1974, by the assignee, *AMF Incorporated.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5 and 8 of said patent.

3,830,907.—*George E. Short,* Arlington Heights, Ill. COMPOSITIONS FOR THE SUSTAINED RELEASE OF 17 α-ETHYL-19-NORTESTOSTERONE. Patent dated Aug. 20, 1974. Disclaimer filed Nov. 24, 1974, by the assignee, *G. D. Searle & Co.*

Hereby enters this disclaimer to claim 8 of said patent.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 7, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-8-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates: Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-26-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	6-24-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions: Bleaching; Dyeing and Photography.	9-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-22-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures: Illumination: Horology; Acoustics; Recorders; Weighing Scales.	12-4-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-11-74
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	8-22-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	11-15-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-8-74
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-4-74
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-25-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	9-23-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-30-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-8-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	11-18-74

Expiration of patents: The patents within the range of numbers indicated below expire during July 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,840,821 to 2,845,624 inclusive
Plant Patents..... Numbers 1,722 to 1,739 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 1, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T936,001

NOVEL HYDROXYL-TERMINATED POLYMERS

Robin N[1]kolas Greene, Apt. 4, 1425 Slate Run Road, New Albany, Ind. 47120

Filed Mar. 12, 1974, Ser. No. 450,357

Int. Cl. C07c *31/18*
U.S. Cl. 260—635 R

No Drawing. 16 Pages Specification

Liquid, random ethylene/C_3–C_{20} α-olefin copolymers having an average hydroxyl functionality of about 1.8–3.0 and a number-average molecular weight of about 300–3500, useful as starting materials for the preparation of high molecular weight polyurethanes and polyesters, are made from random ethylene/C_3–C_{20} α-olefin copolymers (having about 1.8–3.0 carboxylic groups, 1.0–1.5 chain ester groups, 0.4–1 chain ketone groups, and 1.0–2.0 chain hydroxyl groups per molecule on the average) by a process involving the following consecutive steps:

(1) treating the carboxyl-containing copolymer at about 20° C. to about 100° C. in an inert solvent with about 5–10 moles each of PCl_3 and PCl_5 per mole of polymer to convert substantially all hydroxyl groups to chloride and carbonyl groups to *gem*-dichloride;

(2) removing excess phosphorus chlorides;

(3) contacting the polymeric product of (1) in an inert dry solvent (preferably tetrahydrofuran) with about 3–6 moles of $LiAlH_4$ and 10–60 moles of LiH per mole of polymer to reduce substantially all carboxyl, carboxylic acid chloride, and ester groups to hydroxyl groups and all *gem*-dichloride groups to methylene groups; and

(4) decomposing the unchanged metal hydrides with water or alcohol (preferably in the presence of ions of a neutral metal salt such as NaCl) and recovering the hydroxyl-substituted polymer.

T936,002

HYDROXYL-TERMINATED CHLOROPRENE POLYMERS

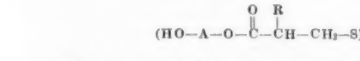
James T. Hill, 509 Rienzi Drive, La Place, La. 70068

Filed Mar. 18, 1974, Ser. No. 452,336

Int. Cl. C08g *22/08*
U.S. Cl. 260—77.5 CR

No Drawing. 11 Pages Specification

Hydroxyl-terminated chloroprene polymers, suitable as starting materials for the preparation of self-extinguishing polyurethanes, are made by hydrolyzing xanthate-terminated chloroprene polymers to mercaptan-terminated polymers, then contacting those with a hydroxy-alkyl acrylate or methacrylate. The polymers can be represented by the following formula



wherein A is a C_2–C_6 alkylene radical; R is hydrogen or methyl; *n* has an average value of 2 to 4; and X is a polymer fragment, which is either a homopolymer of chloroprene or a copolymer of chloroprene with up to equimolar amount of a coplymerizable monomer.

T936,003

STABILIZATION OF α,α-DISUBSTITUTED-β-PROPIOLACTONES

Windell C. Watkins, 1605 Auburn Drive, Longview, Tex. 75601, and James J. Ward, Rte. 1, Box 108B, Henderson, Tex. 75652

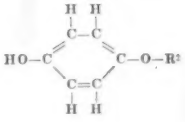
Continuation of abandoned application Ser. No. 205,763, Dec. 7, 1971. This application May 2, 1974, Ser. No. 466,363

Int. Cl. C07d *3/00*
U.S. Cl. 260—343.9

No Drawing. 10 Pages Specification

α,α-Disubstituted-β-propiolactone having the general formula

wherein R and R^1 are selected from the group consisting of hydrogen, straight- or branched-chain alkyl groups of from 1 to 10 carbon atoms, substituted or unsubstituted cyclic hydrocarbon groups of from 6 to 10 carbon atoms, or wherein R and R^1 join to form a ring of from 6 to 10 carbon atoms, are effectively stabilized against premature polymerization during storage by including in admixture therewith a stabilizing amount of a hydroquinone monoalkyl ether having the general formula



wherein R^2 is a straight-, branched-chain, or cyclic alkyl group of from 1 to 10 carbon atoms.

T936,004

SOLID STATE WATCH DISPLAY

Alan E. Willis, 122 Berrian Road, Stamford, Conn. 06902

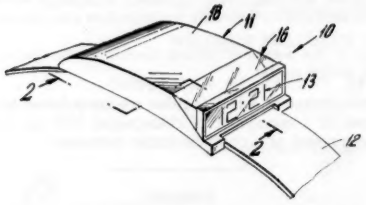
Filed July 1, 1974, Ser. No. 484,481

Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R

1 Sheet Drawing. 9 Pages Specification

A solid state watch display comprises a display mounted to the sloping face of a solid state watch. The display

includes a reflector mounted along the sloping face of the watch, a triangular prism with the hypotenuse of the triangle adjacent to the reflector, a polarizing filter adjacent to the vertical face of the prism and a liquid crystal cell between said polarizing filter and an outer polarizing filter. The light enters the prism through the upper



horizontal face thereof, and is reflected outwardly through the vertical face of the prism. The light passes twice through polarizers in contrast to the four passes generally required by conventional front illuminated displays. Thus, there is considerably less loss of light with the subject display.

T936,005

HIGH TENACITY CRIMPED TOW AND PROCESS

Ronald Royce Kramer, 6 Oxford Crescent, P.O. Box 22, Amherstview, Ontario, Canada

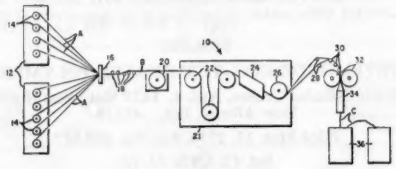
Continuation of application Ser. No. 306,920, Nov. 15, 1972. This application Sept. 4, 1974, Ser. No. 503,118

Claims priority, application Canada, Jan. 18, 1972, 132,731

Int. Cl. D02g *1/12*

U.S. Cl. 28—72.14

1 Sheet Drawing. 7 Pages Specification



A process is disclosed for producing a drawn, crimped tow (for staple) having increased tenacity by: combining a multiplicity of ends of drawn high tenacity industrial yarn of a synthetic polymeric material to form a tow, heating and plasticizing the tow and crimping the tow so plasticized.

REISSUE PATENTS

GRANTED JULY 1, 1975

ERRATA

For CLASS	See PATENT NO.
182-016	28,455
260-563	28,456
285-354	28,457
210-080	28,458
034-006	28,459
206-424	28,460
235-061.11 R	28,461
124-001	28,462

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U.S. Cl.

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REISSUES

JULY 1, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

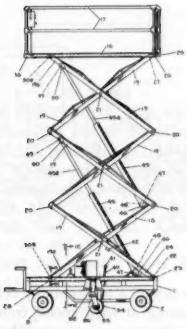
Re. 28,455
PORTABLE ELEVATOR WORKING AND LOAD-LIFTING PLATFORM

Howard H. Denier; Dennis J. Denier; Thomas Hedger, all of Cincinnati, and Lee R. Garrett, Hamilton, all of Ohio, assignors to Howard H. Denier, Cincinnati, Ohio

Original No. 3,596,735, dated Aug. 3, 1971, Ser. No. 872,542, Oct. 30, 1969. Application for reissue Aug. 2, 1973, Ser. No. 385,078

Int. Cl. E04g *1/22*

U.S. Cl. 182—16 **33 Claims**



1. A lifting vehicle comprising:

a base member resting upon the ground and movable in a horizontal path;

a vertically movable platform disposed above said base member;

a compound lever system interconnecting the base member and platform operable in scissors fashion for raising and lowering the platform vertically relative to the base member at a selected horizontal location;

said compound lever system comprising a plurality of bar members pivotally connected together at the central portion thereof and having ends pivotally connected together;

said lever system having a lower bar member pivotally connected to the base member and having a companion lower bar member connected to the base member for longitudinal motion relative thereto, during the extending or collapsing motion of the compound lever system;

said compound lever system having an upper bar member pivotally connected to the said platform for pivotal movement and having a companion upper bar member connected to the platform for longitudinal motion relative to the platform during the extending or collapsing movement of the compound lever system;

upright rotatable primary power elements mounted on the base member and each having ram elements engageable with concave sockets supported on a portion of the lower companion bars of the compound lever system when the lever system is in the said collapsed position, thereby to provide a direct thrust for shifting the lever system initially from said collapsed position to a partially erected position;

a horizontal shaft extending transversely across the base member, said primary power elements having lower ends connected and secured to said shaft for pivotal motion of the power elements;

and a plurality of paired secondary power elements normally disposed at an acute angle to the base member for erecting the companion bars of the lever system from the said partially erected position;

a pair of said secondary power elements having lower ends pivotally connected to the lower ends of said bar members pivotally connected to said base member and having a ram pivotally connected to an intermediate portion of the compound lever system;

said paired secondary power elements to pivot from said acute angle toward an upright position and to extend the compound lever system to a predetermined height after the primary booster power elements have initially shifted the same from said collapsed position thereby to elevate said platform.

Re. 28,456
INORGANIC LITHIUM AMINE COMPLEXES

Arthur W. Langer, Jr., Watchung, and Thomas A. Whitney, Roselle, both of N.J., assignors to Exxon Research & Engineering Co., Linden, N.J.

Original No. 3,734,963, dated May 22, 1973, Ser. No. 808,328, Mar. 18, 1969. Application for reissue Jan. 4, 1974, Ser. No. 430,770

Int. Cl. C07c *87/14, 87/20, 87/38*

U.S. Cl. 260—563 R **11 Claims**

1. A complex comprising: (a) an inorganic lithium salt having a lattice energy less than 210 kilocalories per mole at 18°C., and (b) a monomeric or polymeric polyfunctional chelating tertiary hydrocarbyl amine containing at least two nitrogen atoms. [atoms and at least 2 tertiary nitrogen atoms.]

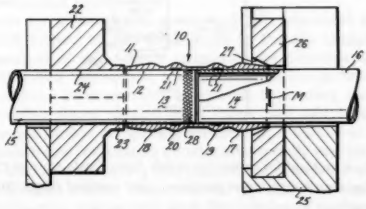
Re. 28,457
COUPLING FITTING FOR CONNECTING TWO PIPES

James A. Dawson, New Orleans, La., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Original No. 3,675,949, dated July 11, 1972, Ser. No. 38,355, May 18, 1970. Division of Ser. No. 739,528, June 24, 1968, Pat. No. 3,572,779. Application for reissue Oct. 25, 1972, Ser. No. 300,469. The portion of the term of this patent subsequent to Mar. 30, 1988, has been disclaimed.

Int. Cl. F16l *19/02*

U.S. Cl. 285—354 **7 Claims**



1. A coupling fitting for joining two cylindrical tubes at the adjacent ends thereof, [said fitting including a sleeve engaged on the end of each of said two tubes, one of said sleeves having an enlarged portion with external threads, the other of

said sleeves having a flange thereon presented to abut said enlarged diameter portion of said one sleeve, and internally threaded fitting mounted over said flange and engaged with said external threaded portion to hold said enlarged portion and flange in abutment, and each of said sleeves with an initially cylindrical inner surface telescoped over each end portion of said tubes to be joined, the sleeves being formed with a plurality of axially spaced and radially thickened gripping bands initially formed on the exterior surface circumscribing the end portion of the tubes to be joined and which bands are transposable to said inner cylindrical surface to deform the outer surface configurations of the tubes, thereby leaving said sleeves with a final outer surface configuration of substantially cylindrical extent to conform to the cylindrical outer surfaces of the tubes.], *each tube having a wall of uniform thickness and outer and inner cylindrical surface shape, said fitting including a sleeve engaged on the end of each of said two tubes, one of said sleeves having an enlarged diameter portion with external threads, the other of said sleeves having a flange thereon presented to abut said enlarged diameter portion of said one sleeve, an internally threaded fitting mounted over said flange and engaged with said external threaded portion to hold said enlarged portion and flange in abutment, and each of said sleeves having an initially cylindrical inner surface telescoped over an end portion of said tubes to be joined, the sleeves being formed with a plurality of axially spaced and radially thickened gripping bands initially formed on and externally projecting from the exterior surface circumscribing the end portion of the tubes to be joined and which bands are transposable through to said inner cylindrical surface to deform the outer and inner surface configuration of the tubes, thereby leaving said sleeves with a final outer configuration of substantially cylindrical extent to conform to the cylindrical outer surfaces of the tubes, said transposable bands and sleeves and said tubes being formed of materials in which said tubes have greater spring-back than said sleeves and said sleeves are lengthened differentially relative to said tubes to establish a fluid tight fitting.*

Re. 28,458

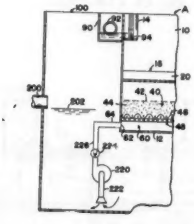
APPARATUS AND METHOD OF FILTERING SOLIDS FROM A LIQUID EFFLUENT

David S. Ross, Lorain, Ohio, assignor to Hydro-Clear Corporation, Avon Lake, Ohio

Original No. 3,459,302, dated Aug. 5, 1969, Ser. No. 633,458, Apr. 25, 1967. Application for reissue Feb. 9, 1973, Ser. No. 331,001

Int. Cl. B01d *23/24*

U.S. Cl. 210—80 **6 Claims**



13. A method for removing solids from waste sewage effluent having small and large particles, said method comprising the steps of:

a. providing a particulate filter bed with an upper surface and adapted to block flow of said large particles;

b. developing a body of said effluent above said surface; and,

c. mechanically creating an admixture of air and effluent in said body and over said surface by a diffuser extending adjacent said upper surface, which admixture has a lower specific gravity than said effluent forming said body whereby said admixture rises in said body of effluent and creates positive currents which sweep over said surface while said effluent is being filtered for lifting said large particles from said surface.

Re. 28,459

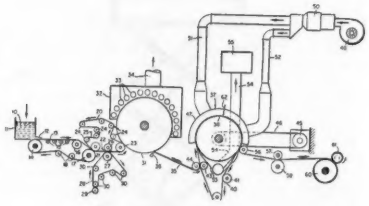
TRANSPIRATION DRYING AND EMBOSSING OF WET PAPER WEBS

Richard I. Cole, Springfield, Pa.; Donald E. Holcroft, Claymont; Edward A. Milligan, Wilmington, both of Del., and Samuel Greenhalgh, Philadelphia, Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Original No. 3,432,936, dated Mar. 18, 1969, Ser. No. 649,776, May 31, 1967. Continuation-in-part of Ser. No. 555,748, June 7, 1966, abandoned. Application for reissue Dec. 7, 1972, Ser. No. 313,158

Int. Cl. F26b *3/06*

U.S. Cl. 34—6 **37 Claims**



1. A method for drying a substantially continuous wet web of paper fibers issuing at high speed from a papermaking machine, including the steps of pressing the web into contact with a foraminous surface, advancing said web into a drying zone while supporting it on said foraminous surface, contacting the surface of said supported web most remote from said foraminous surface with a gaseous fluid under a pressure greater than atmospheric pressure, creating a pressure drop and a flow of gaseous fluid through the web from the surface most remote from said foraminous surface to the surface adjacent said foraminous surface, advancing said web out of said drying zone, and withdrawing said web from said foraminous supporting surface.

Re. 28,460

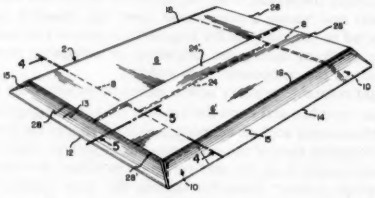
CARTON

Benjamin Rous, New York, N.Y., assignor to Stone Container Corporation, Chicago, Ill.

Original No. 3,682,370, dated Aug. 8, 1972, Ser. No. 31,239, Apr. 23, 1970. Application for reissue Sept. 24, 1973, Ser. No. 400,138

Int. Cl. B65d *5/02, 5/08*

U.S. Cl. 206—424 **3 Claims**



1. A carton for packaging an article comprising:

a bottom wall, a first and second pair of walls, each of said first and second pair of walls being joined to said bottom

wall, said second walls being oblique with respect to said bottom wall, said oblique second walls forming an air cell for protecting the article in the carton, a first flap being joined to each of said first walls and being parallel to said bottom wall, a second flap being joined to each of said second walls and being parallel to said bottom wall, *at least one of* said first flaps including a pair of third flaps, each of said pair of third flaps being positioned at each end of said first flap, each of said pair of third flaps including a first member and a second member, said first and second members being hinged along a common score line, said common score line being positioned to bear against the intersection between said second and bottom walls [.], *at least a portion of said first member bearing against the article for positioning the article centrally of said bottom wall and preventing the article from slipping into the air cell.*

Re. 28,461

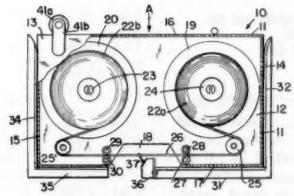
TAPE CARTRIDGE AND READER

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 8,840

Original No. 3,555,245, dated Jan. 12, 1971, Ser. No. 463,097, June 11, 1965. Continuation-in-part of Ser. No. 152,702, Oct. 17, 1961, abandoned, which is a division of Ser. No. 449,874, July 28, 1954, abandoned, which is a division of Ser. No. 142,748, Aug. 28, 1961. Application for reissue May 8, 1974, Ser. No. 468,132

Int. Cl.[2] G06K *7/04*; **B65H** *17/42*; **G11B** *15/32*

U.S. Cl. 235—61.11 R **18 Claims**



8. A tape storage and transducing assembly comprising:

a tape cartridge having a housing having sidewalls and end walls joined to said sidewalls;

an opening in an end wall of said housing;

supply and takeup means within said housing for flexible recording tape;

means for guiding and moving said tape longitudinally past said opening;

a base for supporting said cartridge including means for removably holding and operatively positioning said cartridge on said base;

drive means secured to said base and operative to become coupled to drive said tape when said cartridge is operatively positioned on said base;

transducing means mounted on said support and located so as to be out of coupling relationship with the tape disposed adjacent the opening in said housing when said cartridge is operatively held on said base; and

means supported by said base, for engaging the portion of said tape extending across said opening in said cartridge and withdrawing said tape outwardly from said cartridge housing into engagement with said transducing means to operatively couple the tape with the transducing means.

Re. 28,462

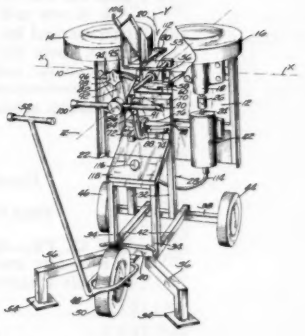
BALL THROWING MACHINE

Earl W. Halstead, St. Petersburg, Fla., assignor to Tru-Pitch, Inc., St. Petersburg, Fla.

Original No. 3,724,437, dateE Apr. 3, 1973, Ser. No. 92,080, Nov. 23, 1970. Application for reissue Aug. 14, 1973, Ser. No. 388,249

Int. Cl. F41b *15/00*

U.S. Cl. 124—1 **7 Claims**



1. A ball throwing apparatus comprising

a relatively fixed frame;

an adjustably positioned frame connected to said fixed frame;

a pair of ball propelling wheels mounted on said adjustable frame in substantially coplanar relation for rotation about spaced parallel axes with tread portions of said wheels disposed in operatively spaced relation for throwing a ball placed in the nip between said wheel treads;

separate variable speed motors driving said wheels in opposite directions;

means for introducing a ball to be thrown into the nip between said wheels; and

means for adjusting the position of said adjustable frame with respect to said fixed frame to thereby change the position of said wheels to control the direction of the flight of a thrown ball, said adjusting means including, a universal joint assembly operatively connecting said adjustable frame to said fixed frame and said adjusting means further comprising a first shaft mounted on said fixed frame for rotation about a substantially vertical axis, a second shaft having one end thereof connected to said adjustable frame, means carried by said first shaft for supporting said second shaft for rotation of said second shaft about two horizontal axes perpendicularly disposed relative to each other, said vertical axis and said two horizontal, axes intersecting at a substantially common point; and

means associated with said fixed frame for locking said adjustable frame into position after the desired adjustment about any one of said axes has been made.

PLANT PATENTS

GRANTED JULY 1, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,736
BOXWOOD PLANT
Constant De Groot, Oakville, Ontario, Canada, assignor to Sheridan Nurseries Ltd., Toronto, Ontario, Canada
Filed June 15, 1973, Ser. No. 370,435
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct variety of Buxus hybrid plant, characterized by its shorter growth cycle, uniform globe shape, dense and compact growth habit, and deep olive green colour; and by its lack of any general tendency to turn brown-coloured through the winter months, and that it produces substantially no flowers or fruit.

3,737
AVOCADO TREE
Harold E. Kendall, P.O. Box 458, Goulds, Fla. 33170
Filed Feb. 13, 1974, Ser. No. 442,053
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—44 **1 Claim**

1. A new and distinct variety of avocado tree, substantially as shown and described.

3,738
POINSETTIA PLANT
Charles E. Wooldridge, Rustburg, Va., assignor to Paul Ecke, Jr., Encinitas, Calif.
Filed July 10, 1974, Ser. No. 487,248
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by a unique combination of characteristics which are substantially identical in all respects to those of the poinsettia variety known as "#C–1 Red" (Plant Pat. No. 2,923) except for its bract color, said bracts being a distinctive and attractive dark pink color corresponding to near Geranium Lake, as distinguished from the normal red color of the bracts of the variety "#C–1 Red."

PATENTS

GRANTED JULY 1, 1975

ERRATA

For CLASS	See PATENT NO.
415-001	3,891,999
242-056	3,892,012
032-012	3,892,035
356-121	3,892,052
036-044	3,892,077
036-068	3,892,078
037-056	3,892,079
040-106.1	3,892,080
040-214	3,892,081
042-011	3,892,082
043-043.11	3,892,083
046-114	3,892,084
046-180	3,892,085
046-202	3,892,086
046-116	3,892,087
049-037	3,892,088
051-034	3,892,089
051-101 R	3,892,090
051-170	3,892,091
051-154	3,892,092
051-372	3,892,093
052-063	3,892,094
052-221	3,892,095
052-227	3,892,096
052-233	3,892,097
052-270	3,892,098
052-479	3,892,099
166-251	3,892,270
073-362	3,892,281
356-252	3,892,474
179-001 G	3,892,624
360-132	3,892,727
337-077	3,892,933
340-149 R	3,892,948
307-215	3,893,190
310-076	3,893,191
324-065	3,893,192
333-084	3,893,193
335-202	3,893,194
338-132	3,893,195

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PATENTS

GRANTED JULY 1, 1975

GENERAL AND MECHANICAL

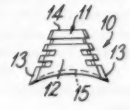
3,891,996
BALLISTIC VEST
Jack Leach, Greensboro, N.C., and William G. Fash, Jamesburg, N.J., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed July 29, 1974, Ser. No. 492,843
Int. Cl. F41h *1/02*
U.S. Cl. 2—2.5 **11 Claims**

1. A ballistic vest comprising:
at least one member formed of a plurality of layers of alternately placed woven fabric sheets of (1) ballistic nylon fiber and (2) aramid fiber, said member being sewn so as to prevent substantial relative movement between said layers; and
means for securing said member to the torso of a person.

3,891,997
HIP-JOINT PROSTHESIS
Jean Jules Marie Ernest Herbert, 11, Boulevard de la Roche de Roi, Aix-Les-Bains, France
Filed Mar. 11, 1974, Ser. No. 449,841
Claims priority, application France, Feb. 20, 1974, 74.06551
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **8 Claims**

1. A prosthetic hip joint comprising:
a femoral element formed with a ball head and a stem projecting from said head and adapted to be received within the upper end of a femur, and
a generally hemispherical socket element adapted to be secured in a predetermined orientation in an ilium at the acetabulum thereof and having an inner surface formed as a generally hemispherical cavity having a single center of curvature and receiving snugly said ball head, and having an outer surface formed as a lower quarter-spherical region having a center of curvature lying above the center of curvature of said cavity and an upper quarter-spherical region adjoining and above said lower region and having a center of curvature coinciding with said single center of curvature of said cavity, said socket element being of uniform radial thickness throughout said upper region and of upwardly increasing radial thickness at said lower region.

3,891,998
ENDOPROSTHETIC SHOULDER JOINT
William Murdoch Lennox, Cheltenham, England, assignor to National Research Development Corporation, London, England
Filed Jan. 7, 1974, Ser. No. 431,403
Claims priority, application United Kingdom, Jan. 12, 1973, 1788/73
Int. Cl. A61f *1/24*
U.S. Cl. 3—1.91 **9 Claims**



1. An endoprosthetic scapular glenoid component comprising a single body of generally frusto-pyramidal overall shaping, said body having its wider end face dished to define a concave bearing surface of substantially part-spherical shaping to an extent significantly less than hemispherical, and having an elongated circumferential form, and the side surfaces of said body being formed with a low-relief structure to afford a key for a gap-filling medium.

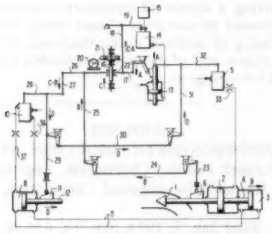
3,891,999
APPARATUS AND METHOD FOR CONTROLLING WATER WHEEL
Tsuneo Ueda, and Seiichi Somiya, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed May 23, 1974, Ser. No. 472,782
Claims priority, application Japan, May 23, 1973, 48-58089
Int. Cl.[2] F01D *17/08*
U.S. Cl. 415—1 **8 Claims**

1. Apparatus for controlling the flow control guide vanes of a penstock which directs the water flow to a water wheel power generating device, wherein said guide vanes are movable between an open and a closed position, and having a pressure regulating device to control the water pressure in said penstock comprising;
a. a first actuating means connected to said guide vanes to selectively move said vanes between an open and a closed position,
b. a second acutating means connected to said pressure regulating device to selectively regulate the pressure in said penstock,
c. a third actuating means connected to said second actuating means and said first actuating means,

d. means to control said first and second actuating means in response to the load or speed of said water wheel, and

e. linkage means interconnecting said first actuating means and said second actuating means with each other and with said control means such that when the speed of closing said guide vanes exceeds a predetermined level, said pressure regulating device is opened to reduce the pressure build up in said penstock.

8. A method of controlling the flow of water through a penstock to a water wheel power generating device comprisig the steps of:



a. sensing the speed of rotation of said water wheel,

b. actuating a governor auxiliary servomotor in response to the speed of rotation of said water wheel,

c. detecting the set position of a load limiting device,

d. actuating a pressure regulator by the difference between the position of said governor auxiliary servomotor and the position of a guide vanes servomotor, and

e. actuating guide vanes by the difference between the position of said pressure regulator and the set position of load limiting device.

3,892,000

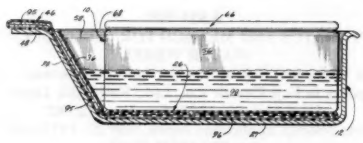
SOFT LINER FOR BATHTUBS

Peter Morse, P.O. Box 687, Waipahu, Hawaii 96797

Continuation of Ser. No. 254,569, May 18, 1972, abandoned. This application Feb. 25, 1974, Ser. No. 445,809

Int. Cl. A47k *3/12*

U.S. Cl. 4—185 F **10 Claims**



1. A flexible and compressible cushion for use in lining a bathtub having a bottom, spaced apart side walls, and a back wall, the cushion including a first section having a hollow interior and shaped to cover the bottom of the tub, means on the first section for admitting and emptying a substantially incompressible fluid to and from, respectively, the interior of the first section; a second section flexibly joined with the first section and adapted to provide a compressible thickness, the second section being shaped to cover at least a portion of the back wall of the tub, the second section having a hollow interior sealed from the interior of the first section for receiving and maintaining a supply of gas under pressure; and third and fourth sections flexibly joined with opposite sides of the first section, each being shaped to cover at least a portion of a respective side wall of the tub, and each having a hollow interior sealed from the interior of the first section for receiving and maintaining a supply of gas under pressure.

3,892,001

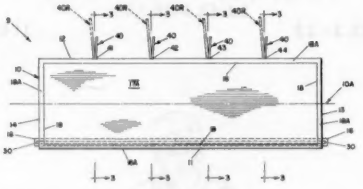
FLEXIBLE PANEL PROTECTOR FOR UPPERMOST SPRINGS OF SOFA BEDS

Charles Schneider, Omaha, Nebr., assignor to Charles, Inc., Council Bluffs, Iowa

Filed Oct. 21, 1974, Ser. No. 516,449

Int. Cl.[2] A47C *23/00, 17/04*

U.S. Cl. 5—354 R **9 Claims**



1. An elongate felexible panel protector adapted to lie neatly flatly horizontally between the removable seating cushions and the uppermost springs of closeably-collapsed sofa beds, said protector panel extending along an elongate linear horizontal central-axis and comprising:

A. An elongate flexible horizontal envelope having a pair of opposed horizontal elongated extremities including a front-side and a rear-side, said envelope comprising an elongate flexible base-sheet having a pair of opposed broad surfaces including a top surface and a bottom surface which is directly abuttably superimposeable against the uppermost springs of a closeably collapsed sofa bed, said envelope also comprising a flexible elongate cover-sheet attached to the base-sheet and having a pair of opposed broad surfaces including a lower-surface and an exposed upper-surface for the removable seating cushions to rest upon;

B. Flexible resiliently compressible padding as self-sustaining laminar sheet material enclosed within and extending along the elongate envelope; and

C. Elongate stiffener means attached to and for stiffening the elongate envelope front-side whereby when the stiffened protector is lifted by an upward force applied solely at a frontal central portion thereof, the envelope elongate frontside remains horizontally linear and buckling of the envelope rearward portions is minimized.

3,892,002

CAR CLEANING APPARATUS

John A. Horner, 211 E. Grove Street, Kawkawlin, Mich. 48631, and Harold C. Baldauf, 10361 Lakewood St., Saginaw, Mich. 48603

Filed May 7, 1973, Ser. No. 358,010

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 D **11 Claims**

1. Apparatus for cleaning the outside of a vehicle moving in a longitudinal path forwardly through a cleaning station comprising:

a frame;

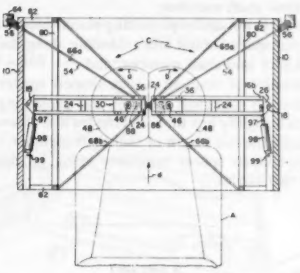
a rotary vehicle cleaning brush; and

means mounting the brush on the frame for longitudinal and lateral movement from a rest position in said path longitudinally forwardly and laterally outwardly to an extreme forward position at the side of the path, then rearwardly alongside said path to an extreme rear position, and then laterally inwardly and forwardly to the rest position, said mounting means including:

support means mountd on the frame for swinging movement between a rest position and extreme forward and rearward positions;

carrier means mounting the brush on the support means for swinging movement therewith and for movement thereon in a to-and-fro path of travel from a laterally inner posi-

tion at one end of said support means to a laterally outer position at the other end thereof, and return, while said support means swings; and



cam means on said frame in the path of one of said carrier means and said brush for controlling the movement of said brush on said support means as said support means swings between said rest position and said extreme forward and rear positions.

3,892,003

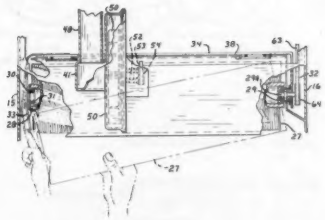
POWER FLOOR TREATING APPARATUS

Ralph C. Peabody, Brooklyn Center, Minn., assignor to Tennant Company, Minneapolis, Minn.

Filed Mar. 16, 1973, Ser. No. 341,973

Int. Cl. A47l *11/00*

U.S. Cl. 15—49 C **13 Claims**



1. Floor maintenance apparatus having a floor treating means operatively coupled thereto and comprising, in combination:

a. rigid frame means having support wheels coupled thereto, a power source mounted on said frame means and having a powered output shaft, and with at least one of said support wheels being drivingly coupled to said power source;

b. implement suspension means coupled to said frame means for journably supporting said floor treating means within said frame, said suspension means including a transverse support member having first and second generally longitudinally extending laterally disposed arms secured thereto, each arm terminating in an outwardly disposed free end and being disposed adjacent said opposed side walls;

c. pivotal mounting means coupling said transverse support member to said frame means and arranged to suspend said transverse support member in free dependent disposition for swinging movement about a support axis extending generally across said frame means;

d. said first laterally disposed arm being generally rigid and having bearing means mounted adjacent the free end thereof, said second laterally disposed arm being longitudinally rigid and laterally flexible and having bearing means mounted adjacent the free end thereof and being normally resiliently biased toward said first arm to a normal disposition spaced a certain first predetermined distance from said first arm, each of said bearing means having inwardly extending boss means;

e. said floor treating means being drivingly coupled to said power source and being of generally cylindrical configuration with an axially extending core means forming an opening at opposed ends thereof for receiving said boss means in driving engagement therewith, said floor treating means having an axial length which exceeds said first predetermined distance;

f. said second laterally disposed arm being arranged for outward flexure to permit removal of said boss means from one end of the core of said floor treating means.

3,892,004

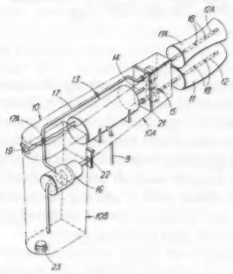
DOMESTIC CLEANING APPARATUS

Thomas Downes, 43 Banchory Pl., Tullibody, Alloa Clackmannanshire, England

Filed Oct. 6, 1972, Ser. No. 295,463

Int. Cl.[2] A46B *13/04*

U.S. Cl. 15—102 **4 Claims**



1. Portable apparatus for cleaning venetian blinds or the like, comprising a housing adapted to be hand-held, a pair of contiguously-mounted slat-cleaning elements mounted on rotatable hollow shafts projecting from the housing, said shafts being free at their ends remote from said housing, an electrically-operated motor mounted in said housing and coupled to rotate said shafts, a reservoir formed in the housing for storing cleaning liquid and having an outlet port, conduit means coupling said outlet port with the hollow interior of said shafts, and means forming perforations in the walls of said shafts in the region thereof mounting said slat-cleaning elements, to permit said cleaning elements to receive cleaning liquid, there being a plurality of said perforations spaced apart lengthwise along each said hollow shaft, the portions of said elements which are external to the housing being free of mechanical interconnections to permit the apparatus to engage a slat to be cleaned by movement of the apparatus laterally with respect to the slat so that opposite sides of a slat are engaged simultaneously by said elements.

3,892,005

SQUEEGEE OR LIKE CLEANING APPLIANCE, PARTICULARLY FOR CLEANING WINDOW PANES AND FLOORS

Harald Berns, Wuppertal-Elberfeld, Germany, assignor to Henry Morton Unger, Solingen, Germany

Filed Oct. 24, 1973, Ser. No. 409,120

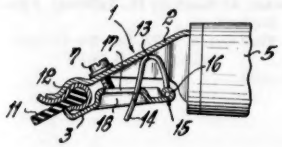
Claims priority, application Germany, Nov. 6, 1972, 2254248.

Int. Cl. A47l *13/11*

U.S. Cl. 15—245 **7 Claims**

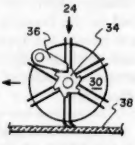
1. A squeegee, particularly for cleaning window panes and floors, comprising

a. an exchangeable substantially strip-shaped cleaning element,
b. first and second clamping jaws,
c. means for pivotally securing said clamping jaws together for movement about a fulcrum,
d. gripping means on each of said first and second clamping jaws on one side of said fulcrum for gripping opposite sides of said cleaning element,
e. an aperture in said first clamping jaw,
f. a clamping lever having a generally U-shaped configuration and including a handle portion at one end thereof,
g. means located at the side of said fulcrum opposite said one side thereof for pivotally securing the end of said clamping lever opposite said handle portion to said first clamping jaw at the side of said first clamping jaw adjacent said second clamping jaw,



h. said clamping lever being arranged to pivot between a locking position in which the portion thereof at about the apex of said U-shaped configuration presses against said second clamping jaw at said opposite side of said fulcrum to bias said gripping means of said clamping jaws towards each other to grip said cleaning element and a release position in which said clamping jaws may freely pivot permitting said gripping means to move away from each other to release said cleaning element,
i. said clamping lever being arranged such that only said handle portion extends through said aperture in said first clamping jaw when said clamping lever is in said locking position and a part of said clamping lever is drawn through said aperture during pivotal movement of said clamping lever to said release position.

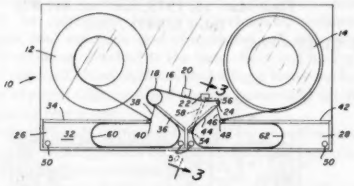
3,892,006
MULTI-BLADED WIPER FOR WINDSHIELD-WIPER ASSEMBLY
Michio Yasumoto, 3909 N.E. 135th, Portland, Oreg. 97230
Filed Sept. 16, 1974, Ser. No. 506,469
Int. Cl.[2] B60S 1/44, 1/38
U.S. Cl. 15—250.22 **14 Claims**



1. A windshield wiper assembly, adapted to be mounted on the oscillating wiper shaft of a conventional vehicle, comprising:
a. a wiper support arm adapted for attachment to a wiper shaft;
b. a flexible shaft member rotatably attached to said wiper support arm;
c. a plurality of radially-projecting planar blades of resilient material spaced about and extending along the longitudinal axis of said shaft member; and
d. means soley carried on said wiper support arm for limiting the rotational movement of said shaft member to one direction only.

8. A windshield wiper comprising:
a. a flexible shaft member;
b. a plurality of radially-projecting planar blades of resilient material spaced about and extending along the longitudinal axis of said shaft member; and
c. a plurality of resilient wedge-shaped spacer members attached to said shaft member and projecting radially a distance slightly less than said blades and extending longitudinally the full length of said shaft member, one of said wedge-shaped spacer members being located between each two blades.

3,892,007
TAPE CLEANER VACUUM INTERLOCK
Richard W. Pembroke, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.
Filed Apr. 18, 1974, Ser. No. 461,866
Int. Cl. A47l 5/38
U.S. Cl. 15—306 A **4 Claims**

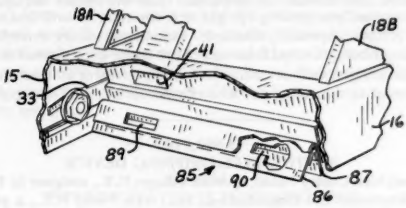


1. In a vacuum controlled tape transport mechanism having first and second tape reels, and a capstan and a read/write head and a tape cleaner interposed between the reels for receiving the tape therearound, the improvement in apparatus for applying vacuum to the tape cleaner comprising:
a. first and second vacuum columns in constant communication with the vacuum system of the tape transport mechanism, each of said vacuum columns being provided with a mouth in the proximity of the path of travel of the tape, the mouth of each vacuum column being open during threading of the tape from one reel to the other reel whereby the pressure in each vacuum column is substantially atmospheric pressure, the mouth of each vacuum column being closed by a loop of the tape subsequent to the threading of the tape whereby a vacuum is established in each vacuum column; and
b. passageway means providing constant communication between one of said vacuum columns and the tape cleaner whereby the pressure at the tape cleaner is substantially atmospheric pressure during threading of the tape from one reel to the other and a vacuum is established at the tape cleaner subsequent to threading of the tape.

3,892,008
VENTED DOUBLE SKIRT SYSTEM

Bryan L. Christensen, and David W. Berg, both of Minneapolis, Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Mar. 16, 1973, Ser. No. 341,975
Int. Cl. A47l *9/06*
U.S. Cl. 15—368 **11 Claims**

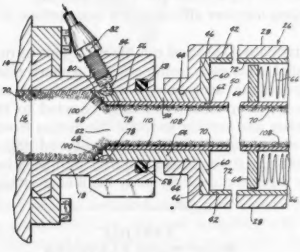


10. The floor sweeping apparatus as defined in claim **1** being particularly characterized in that means are provided for adjustably supporting the elevation of said cylindrical brush.

3,892,009
MEANS OF CONVEYING PLASTIC MATERIAL THROUGH A CONDUIT

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Division of Ser. No. 222,088, Jan. 31, 1972, abandoned. This application Aug. 15, 1973, Ser. No. 388,469
Int. Cl.[2] A22C *11/02*
U.S. Cl. 17—35 **19 Claims**



4. The apparatus of claim **1** wherein said means adjacent said conveying passageway includes a filter means through which said liquid flows into said passageway.

3,892,010
SKINNING MACHINE FOR FISH FILLETS

Alfred Friedrich Adolf Bartels, Lubeck-Israeldorf; Gunther Fritz August Heinrich Pinkerneil, Lubeck, and Herbert Dietrich August Kohn, Bad Schwartau, all of Germany, assignors to Nordischer Maschinenbau Rud. Baader, Lubeck, Germany

Filed Oct. 31, 1973, Ser. No. 411,234
Claims priority, application Germany, Nov. 6, 1972, 2254284
Int. Cl.[2] A22C *25/02*
U.S. Cl. 17—62 **11 Claims**

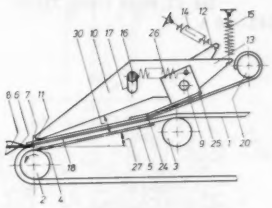
1. A skinning machine for fish fillets including

a flexible conveyor band passing around a roller of small diameter, and having an upper run for receiving fish fillets thereon and transporting said fish fillets toward said roller,

an endless band cutter located proximate to said roller and extending tangentially to said roller and inclined slightly to the direction of travel of the conveyor band,

a guide for the band cutter exposing the cutting edge thereof a selected distance above the upper run of the conveyor band,

a planar rigid and unyielding supporting plate supporting the upper run of the conveyor band and extending into the angle between the roller and said upper run of the conveyor band,



pressing means mounted above the conveyor band and sloping down towards the latter to form a wedge shaped space, said pressing means comprising

a set of presser arms mounted close together side by side and independently pivoted and resiliently biased about an axis, said presser arms having sharply cut off free ends extending close to the cutting edge of the cutter band,

and a flexible apron between the presser arms and the conveyor band, said apron maintaining said fish fillets in flattened condition upon said conveyor band in the vicinity of said band cutter and roller, under downward force of said presser arms.

3,892,011
BUNDLING STRAP WITH SELF-CONTAINED SEVERING MEANS

Stephen J. Kohke, Bridgewater Twsp., N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed May 22, 1974, Ser. No. 472,109
Int. Cl.[2] B65D *63/00*; **B26B** *27/00*
U.S. Cl. 24—16 PB **6 Claims**

1. An improved bundling strap comprising: a head portion, a tail portion, and an elongate body portion therebetween; said head portion having an aperture extending therethrough for receiving said body portion; locking means for restricting removal of said body portion from said head portion; and severing means coupled to said head portion and having a sharpened blade cooperative with said head portion aperture for severing said strap body portion thereat, said severing

means comprising a metallic sleeve having a wall portion seated within said head portion aperture.

3,892,012

METHOD OF AND APPARATUS FOR FORMING ROLLS OF CONTINUOUSLY SUPPLIED SHEET MATERIAL

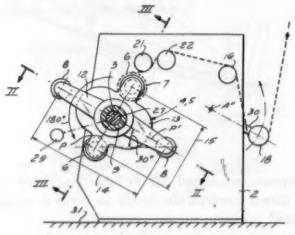
Horst Keferstein, Mullekoven, Germany, assignor to Reifenhauser KG, Troisdorf, Germany

Filed Apr. 8, 1974, Ser. No. 459,049

Claims priority, application Germany, Apr. 6, 1973, 2317325

Int. Cl. B65h *19/20, 75/34*

U.S. Cl. 242—56 A **12 Claims**



1. An apparatus for forming rolls of a continuously supplied sheet, said apparatus comprising:

two mounting assemblies jointly rotatable about a rotation axis and carrying two pairs of holders defining a pair of parallel core axes parallel to said rotation axis and diametrically across said rotation axis from each other, one holder of each of said pairs being provided on each of said assemblies;

a pair of elongated parallel deflecting elements extending parallel to said rotation axis between said assemblies and lying to either side of a core plane including said rotation axis and said core axes;

means for rotating about said core axes cores carried on said holders and each lying along a respective core axis; means for wrapping said sheet around one of said cores, whereby said sheet is wound up on said one core, and for cutting said sheet and wrapping same about the other core when said one core is filled, whereby said sheet is wound up on said other core; and

means for rotating said assemblies and said elements about said rotation axis through substantially 180° after cutting of said sheet and wrapping of same about said other core.

3,892,013

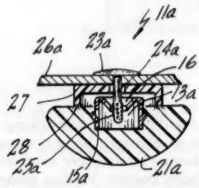
BUTTON MOUNTING DEVICE

Sheldon D. Gould, 1159 Brighton Beach Ave., Brooklyn, N.Y.

Filed Dec. 21, 1973, Ser. No. 427,121

Int. Cl. A44b *1/28, 1/44*

U.S. Cl. 24—90 E **7 Claims**



1. A button mounting device comprising in combination: a male tack means including an elongated barbed shaft having at a distal end portion thereof radially outwardly-extending barbs directed toward a tack head thereof; a female barbed-shaft receiving-means of a metallic composition and for lockably receiving said distal end portion and barbs thereof, having a hollow first cap structure with an open bottom and with an upper cap central aperture defined by inner distal ends of downwardly-directed radially-inwardly-extending tongue-flanges of the first cap structure, the inner distal ends being lockably engageable of said barbs against withdrawal of the barbs, the female barbed-shaft receiving-means including downwardly-extending upright wall structure of said first cap structure, upwardly-directed radially-outwardly-extending flanges being formed from and cut at upper ends thereof from said upright wall structure and being integral at base ends thereof to remaining portions of said upright wall structure.

3,892,014

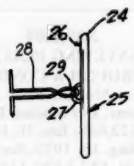
BUTTON-TYPE GRIPPING DEVICE

Josephine Cooley Nolan, Queens Village, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 16, 1973, Ser. No. 416,491

Int. Cl.² A44B *1/18*

U.S. Cl. 24—103 **2 Claims**



1. A button-type gripping device, comprising

a button having a front and a rear surface;

a coupling member affixed to the rear surface of the button; and

a substantially U-shaped pin having a pair of next-adjacent parallel arms each terminating in a sharp material piercing point, said arms being bent around each other to form a closed loop head releasably coupled to the coupling member and serving to space the button from associated material to which the button is secured, the arms of the pin passing through said material and being bent near the ends thereof outwardly away from each other.

3,892,015

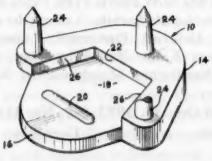
WAISTBAND FASTENER

Donald O. Taylor, Waterbury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed June 17, 1974, Ser. No. 479,675

Int. Cl. A44b *13/00*

U.S. Cl. 24—201 HH **4 Claims**



1. A waistband fastener comprising identical mating halves, each half including: a flat molded plastic body being formed with a thin flat rounded tongue extending forward from the main portion of the body at substantially the upper surface thereof, the body having a recess, the top of the recess running

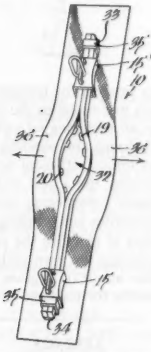
to the underside of the tongue and co-planar therewith, the recess being of a height at least of the thickness of the tongue and being adapted to receive the tongue of the mating half, the recess being defined by a back surface and converging side surfaces, the latter surfaces being adapted to guide the tongue of the mating part to fully engaged condition when the top and bottom sides of the two halves are oppositely disposed, the undersurface of the tongue being formed with a transverse downward rib adapted to interengage with the rib of the mating part to comprise a lock, a plurality of pins extending downward from the body outward of the recess and integrally formed with the body; and an anchor plate having holes aligned with the pins respectively and adapted to receive the pins so that the pins may thereafter be headed to secure the body-plate assembly to a layer of fabric disposed between the body and plate.

3,892,016

INTERDIGITATED SEALING CLOSURE

Alexander M. Brown, 53 Turin Coach Ct., Daytona Beach, Fla. 32014

Filed Aug. 9, 1974, Ser. No. 496,136
Int. Cl. A44b *19/32, 19/10*
U.S. Cl. 24—205.1 R **17 Claims**



1. An interdigitated sealing closure comprising:

a carrier strip defined by opposed longitudinally extending portions;

a core strip joined to and underlying said carrier strip and defining complementary opposed longitudinally extending portions provided with arrays of interdigitatable teeth, a first array of said teeth being joined to one of said carrier portions, and a second array of said teeth being joined to the other of said carrier portions;

a slider movable along said carrier and core strips for sequentially interdigitating the opposed teeth of the core strip; and

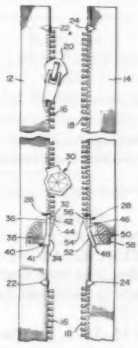
a resilient sealing strip underlying and being joined to said core strip and including a first sealing strip portion joined to said core strip portion defining said first array of teeth and a second sealing strip portion joined to said other core strip portion defining said second array of teeth, said sealing strip portions defining confronting sealing surfaces in sealing abutment when said core strip teeth are interdigitated, said core strip defining a preselected portion free of teeth permitting the sequential separation of the interdigitated arrays of teeth as an incident of application of opposite outwardly directed forces to said core strip portions commencing at said preselected portion, and said slider maintaining said core strip opposed portions juxtaposed at said preselected portion and thereby maintaining said sealing strip portion sealingly abutting adjacent said preselected portion when said slider is disposed at said preselected portion.

3,892,017

SEPARABLE SLIDE FASTENER AND METHOD OF FORMING THE SAME

David G. Watson, Meadville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Feb. 22, 1974, Ser. No. 445,038
Int. Cl. A44b *19/24*
U.S. Cl. 24—205.11 F **21 Claims**



1. A separable slide fastener comprising

a pair of tapes carrying interengaging elements along inner edges thereof;

a slider movable along said interengaging elements to open and close said slide fastener;

separable end stop means including a support member secured to one of said tapes having a head portion, a pin member secured to the other of said tapes, and a retainer immovably mounted on said support member having first and second opposing side walls, a partition disposed between said first and second side walls to define first and second channels in said retainer for receiving said support member and said pin member, respecitvely, and means in said first channel defining a pocket having a configuration mating with the configuration of said head portion of said support member to lock said head portion in said pocket; said support member having a shank; and

said head portion having a wedge-like configuration extending from said shank and terminating at an end wider than said shank.

3,892,018

DEVICE FOR THE PNEUMATIC SQUEEZING OF A CONTINUOUSLY MOVING THREAD

Jacques H. Rose, Saint Quentin, France, assignor to O.P.I. Textile, rue de Saint Quentin, France

Filed July 23, 1974, Ser. No. 491,036
Claims priority, application France, July 24, 1973, 73.26980
Int. Cl. D02j *13/00;* **F26b** *5/04*
U.S. Cl. 28—62 **4 Claims**

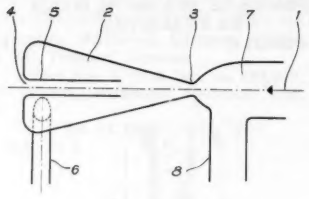
1. A device for the pneumatic squeezing of a continuously moving thread comprising a squeezing chamber provided with inlet orifice and an outlet orifice for the thread, these orifices being aligned in the axis of said chamber, and a pipe for feeding the chamber with squeezing fluid, characterised in that

the chamber is substantially cone-shaped

the inlet orifice for the thread is placed at the end of the chamber having the smallest cross-section

the outlet orifice for the thread is placed at the end of the

chamber having the largest cross-section the squeezing fluid feed pipe communicates with that part



of the chamber having the largest cross-section, tangentially to the inner wall of the chamber.

3,892,019

APPARATUS FOR INTRODUCING YARNS INTO DRAW-EXTURING MACHINES

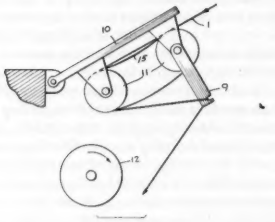
Albert Rebsamen, Wilen, and Paul Gubler, Herisau, both of Switzerland, assignors to Heberlein and Co. AG., Wattwil, Switzerland

Filed June 15, 1973, Ser. No. 370,458

Claims priority, application Switzerland, June 21, 1972, 9347/72

Int. Cl. D02g *1/00*

U.S. Cl. 28—1.2 **2 Claims**



1. Apparatus for introducing a yarn into draw-texturing machines which include delivery devices (**2,3**) and texturing means (**5,6**), characterized by yarn holding means (**9,11,15**) positioned between said delivery devices and said texturing means to provide a yarn guide path longer than the normal yarn guide path between said delivery devices and texturing means, and means (**10**) shifting said yarn holding means out of engagement with the yarn prior to operation of said texturing means whereby the yarn tension is reduced and a start yarn reserve is provided, one of said delivery devices (**3**) on the output side of the drawing device including a fixedly located drive roller (**12**) and said yarn holding means comprising at least one pressure roller (**11**) around which the yarn passes, said pressure roller being movable between a first yarn insertion position away from the drive roller wherein the yarn is out of contact with the latter, and a second normal position wherein the yarn contacts the drive and pressure rollers, and an additional holder (**9**) arranged to support the yarn when same is in yarn insertion position and to release same to normal position when said pressure roller moves from its first to its second position.

3,892,020

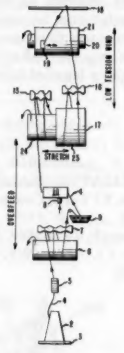
PREPARING A TEXTURED YARN PACKAGE, FOR DYEING

Manfred Gunter Koslowski, Vorhelm/Kreis Beckum, Germany, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Dec. 14, 1973, Ser. No. 424,811

Int. Cl. D02g *1/16*

U.S. Cl. 28—72.12 **2 Claims**



1. In a continuous process for texturing then winding yarn on a package support that includes the steps of overfeeding a feed yarn through an air texturing jet with the resultant formation of texture-giving loops and winding the textured yarn on the package support under sufficient tension to stabilize the yarn without eliminating the loops and form a package of yarn, the improvement comprising: stretching the textured yarn between the texturing and winding steps, the degree of stretch being sufficient to stabilize the yarn without eliminating the loops; and winding the yarn under relatively low constant tension less than about 0.04 gram per denier to form a package of yarn suitable for package dyeing.

3,892,021

PROCESS FOR PRODUCING CRIMPED POLYESTER FIBERS OF HIGH MODULUS

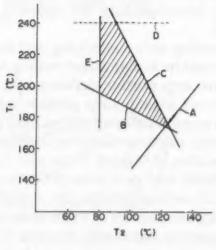
Nobuharu Izawa, Nishikoizumi; Mutsuo Katsu, and Yasuhiro Murase, Takamitsu Kondo, all of Matsuyama, all of Japan, assignors to Teijin Ltd., Osaka, Japan

Filed Oct. 31, 1973, Ser. No. 411,385

Claims priority, application Japan, Nov. 6, 1972, 47-110228

Int. Cl. D02g *1/12*

U.S. Cl. 28—72.14 **3 Claims**



1. A process for producing crimped polyester fibers of high modulus, which comprises drawing an undrawn tow of polyester to 1.15 to 1.45 times the natural draw ratio, heat-treating the drawn tow under tension at a temperature T_1(℃.), feeding it into a stuffer crimper to crimp the tow while maintaining it

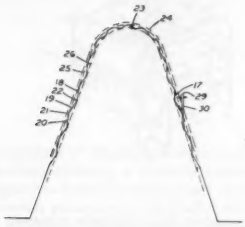
at a temperature of 80° to 130°C., and heat-treating the tow at a temperature of T_2(°C.) while allowing free shrinkage of the tow and maintaining the packing density of the tow at at least 200 kg/m³, the T_1 and T_2 satisfying the following relation

$$1.25\ T_2 + 21 \quad T_1 \quad 240$$
$$-2.0\ T_1 + 470 \quad T_2 \quad -0.5\ T_1 + 210$$
$$80 \quad T_2.$$

3,892,022
ROUGHING HOB

Stuart J. Johnson, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed May 10, 1974, Ser. No. 468,914
Int. Cl.² B26D *1/12*
U.S. Cl. 29—103 B **10 Claims**

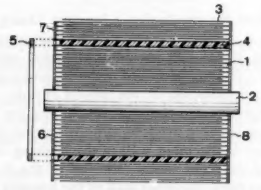


1. A roughing hob providing for efficient chip breaking in a subsequent finishing operation by leaving a plurality of alternating heavy and light sections to be removed, said hob comprising a cylindrical hub, a thread on said hub, and flutes cut through the thread to form a plurality of teeth in the thread, a cutting edge created on each of said teeth by a respective one of the flutes, a profile of each of said cutting edges comprising a plurality of undulations for generating the alternating heavy and light sections and having a peak envelope approaching a desired finished profile.

3,892,023
PROCESS OF MANUFACTURING A CAPACITOR ASSEMBLY

Georges Warmont, Monceau sur Sambre, Belgium, assignor to Ateliers de Constructions Electriques de Charlerol, (ACEC), Charlerol, Belgium

Filed Apr. 20, 1973, Ser. No. 353,123
Claims priority, application Belgium, Apr. 21, 1972, 3965
Int. Cl. H01g *13/06*
U.S. Cl. 29—25.42 **1 Claim**



1. The method of manufacturing an assembly of a roll of wound capacitors, comprising the steps of:

forming a first rolled capacitor with the electrodes offset axially to respectively project from opposite ends of the roll;

placing a layer of insulating material around said first capacitor with at least one edge thereof spaced axially inwardly of the axial edges of the adjacent electrodes;

wrapping at least a second capacitor around said insulation outwardly of said first capacitor in radial alignment therewith whereby said one edge of said insulation defines the bottom of a circular groove in an end face of said roll of capacitors and between said first and second capacitors;

placing a masking ring in said groove;

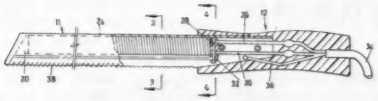
metallizing both axial end faces of said roll of capacitors to electrically connect the electrodes projecting from each end; and

removing said masking ring and its overlying metallization whereby to electrically separate the electrodes at one end of said first and second capacitors.

3,892,024
ARTICLES OF CUTLERY, PAINT SCRAPER AND THE LIKE

Petrus Corneluis Van Zyl, Roodenpoort, South Africa, assignor to Spreadall (Proprietary) Limited, Randburg, South Africa

Filed Apr. 19, 1973, Ser. No. 352,696
Claims priority, application South Africa, Apr. 25, 1972, 72/2808; July 20, 1972, 72/5002
Int. Cl. B26b *9/02*
U.S. Cl. 30—140 **3 Claims**

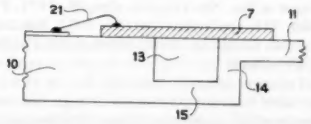


1. A knife comprising: a blade formed of a single elongated sheet metal member having two portions of equal size folded one over the other in coextensive relationship, each portion having a longitudinal recess extending through one end so that a chamber is formed within the blade, said chamber being open at one end of the blade; a washer in the chamber spaced from said one end and having the same shape as the chamber so as to divide the chamber into a front chamber portion and a rear chamber portion; an electric heating element in the front chamber portion; a handle formed as a molding of heat and electrically insulating material molded onto and surrounding said one end of said blade, the washer preventing the material of the handle from entering the front chamber portion; and electric cable means connected to said heating element and passing through said washer and through the open end of the chamber.

3,892,025
METHOD OF MANUFACTURING ELECTROMECHANICAL VIBRATION PICK-UPS

Lucien Lainez; Fokke Duiker; Joel Bayard, and Dominique Di Campli, all of Paris, France, assignors to Thompson-Brandt, Paris, France

Filed Oct. 9, 1973, Ser. No. 404,783
Claims priority, application France, Oct. 10, 1972, 72.35857
Int. Cl. B29d *17/00*
U.S. Cl. 29—169.5 **10 Claims**



1. A method of manufacturing an electromechanical vibration pick-up device comprising a stylus-holder assembled on at least one beam, said beam having at least one flat face and comprising a first portion to be fixed in a damper, a second

portion for carrying a stylus-holder, and a transistor having a substrate respectively mechanically connected to said flat faces of said first and second beam portions, said method comprising the following steps:

forming a transverse slot on said flat face of said beam, said slot having walls;

securing said transistor substrate to said flat faces astride said slot; and subsequently

cutting through one of said slot walls to create a gap and thus to split the beam into two separate portions mechanically connected together solely by said transistor substrate.

3,892,026

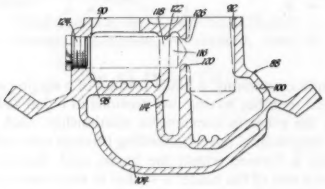
METHOD OF MANUFACTURING AN INTAKE MANIFOLD FOR EXHAUST GAS RECIRCULATION

William F. Thornburgh, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 189,345, Oct. 14, 1971, Pat. No. 3,717,130, which is a continuation-in-part of Ser. No. 43,537, June 4, 1970, abandoned. This application Oct. 13, 1972, Ser. No. 297,496

Int. Cl. B23p *13/02*

U.S. Cl. 29—156.4 R **5 Claims**



1. The method of manufacturing an intake manifold for supplying air and exhaust gas to an internal combustion engine comprising casting a manifold having an induction passage including a riser passage and having a metered exhaust passage extending to an area adjacent said induction passage, said area being at least partially separated from said induction passage by a portion of an induction passage wall, and extending a machining tool into said riser passage along an axis parallel to said portion of said induction passage wall and thereby simultaneously machining said riser passage and removing said portion of said induction passage wall to provide a finished riser passage and to provide an opening from said area into said induction passage through said induction passage wall.

3,892,027

INDUSTRIAL TECHNIQUE

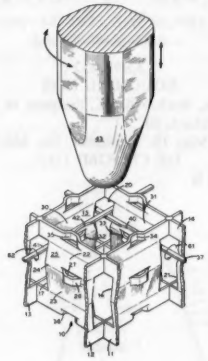
Felix S. Jabsen, Lynchburgh, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Division of Ser. No. 193,383, Oct. 28, 1971, Pat. No. 3,795,040. This application Dec. 14, 1973, Ser. No. 425,033

Int. Cl. B23p *19/00, 19/04;* **G21c** *21/00*

U.S. Cl. 29—200 P **8 Claims**

1. Fuel element asembly apparatus for use in a cellular grid structure with resiliently mounted detents that protrude toward centers of the respective cells comprising cam means for insertion in one direction into at least one of the cells, the surface of said cam means fitting generally within the confines of said cell, means for shifting the position of said cam sufrace to engage at least a portion of the grid structure to deflect the resiliently mounted detents away from the center of said cell, and key means for insertion into said cell in another direction, said key means having at least one dimension to engage the



grid structure and sustain the resiliently mounted detent deflection.

3,892,028

METHOD FOR PRODUCING A HOUSING CASING FOR A ROTARY PISTON INTERNAL COMBUSTION ENGINE

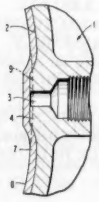
Helmut Dobler, Esslingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Feb. 1, 1973, Ser. No. 328,534

Claims priority, application Germany, Feb. 1, 1972, 2204560

Int. Cl. B23p *15/00, 13/00*

U.S. Cl. 29—156.4 WL **3 Claims**



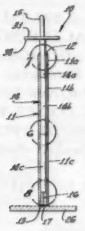
1. A method for producing a housing casing for a rotary piston internal combustion engine, the engine casing consisting of a light metal and including a piston running surface consisting of a coating of a hard material, and a spark-plug-firing channel terminating in the piston running surface, the method comprising the steps of: machining the inner wall of the housing casing to a predetermined contour, leaving during the machining of the inner wall of the housing casing a material island of the light metal material of the housing casing projecting out from the inner wall of the housing casing within the area assigned to the discharge opening of the spark-plug-firing channel, providing a coating of hard material along the inner contour of the housing casing in the machined condition, said material island having a height corresponding at least to the thickness of said coating material, applying the coating of the hard material provided along the inner contour of the housing casing also over the material island, and removing the portion of the hard material coating lying on the material island during the finish-machining operation of the running surface formed by the hard material coating.

3,892,029

METAL DECKING PUNCH AND METHOD

Vincent J. Militello, 1737 Ash Dr., Monterey Park, Calif. 91754

Continuation of Ser. No. 220,046, Jan. 24, 1972, abandoned. This application May 21, 1973, Ser. No. 361,997
Int. Cl. B21d *28/26*
U.S. Cl. 29—428 1 Claim



1. In the method of attaching hangers to sheet metal decking, the decking forming a laterally extending trough, and wherein apparatus is employed to punch openings in the decking that extends generally horizontally, said apparatus comprising an elongated upright tubular guide having opposite open ends, an elongated metallic rod movable endwise in the guide and a handle on one end of the rod projecting from the upper end of the guide and a cross-piece on the rod above the guide, and a punch in the form of a blade integral with the opposite and lower end of the rod, the steps that include

a. selecting a location for forming a hole in the sheet metal decking and placing the punch tip on said location with the rod and guide extending thereabove, rotating the punch and rod to orient the cross piece and thereby orient the blade in the direction of the trough and of an opening to be formed in the decking by the blade.

b. manually lifting the handle to elevate the rod and punch relative to the sleeve while maintaining the lower end of the sleeve in engagement with the decking proximate said location,

c. dropping the handle to drop the rod for developing momentum acting to propel the punch blade through the decking to form said opening therein at said location, guiding the rod to prevent rotation thereof during said dropping, limiting said dropping by allowing the cross-piece to engage the guide, and removing the punch from the opening, and

d. extending a hanger through said opening to be supported by the upper side of the decking.

3,892,030

METHOD OF FABRICATING A BILLET FROM METAL PREFORMS AND METAL POWDER

Vincent De Pierre, and Ferdinand J. Gurney, both of Dayton, Ohio, assignors to United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 29, 1974, Ser. No. 464,874
Int. Cl. B22f *3/24*
U.S. Cl. 29—420 1 Claim

1. In a method for fabricating billets, raw stock and the like in preparation for the production of various parts, components and products to be assembled therefrom, the steps comprising; initially preparing a metal powder-receiving tube device by, first, selecting a rather easily deformable, first, relatively thin-walled and open-ended, hollow primary metal tube of a desired length, predetermined diameter and particular wall thickness, and forming a metal powder-receiving chamber therewithin, thereafter forming a closed bottom at one end of said primary tube, as by welding a first, solid metal end piece thereto, then affixing a second, readily removable, relatively elongated and reduced diameter-hollow, open-ended and centrally-disposed, temporary metal powder-storage, passage containing and feeding auxiliary metal tube in the opposite open end of said first, primary tube, as by sealing thereinto a second, relatively enlarged metal end piece having a central passage, an inner end extending substantially into said primary tube-chamber and rigidly mounting said second, auxiliary tube in the said central passage with a first, inner passage end extending inwardly into the primary tube passage a significant degree to a position of exact alignment with the inner end of said second, metal end piece, and a second, outer passage end projecting outwardly a substantial distance of the outer end of said second, metal end piece and adapted to be releasably attached to a vacuum line and vacuum pump; subsequently introducing a predetermined supply of loose metal powders into the chamber of said primary tube, by way of and as may be measured by the amount thereof being respectively and initially admitted into, and temporarily stored by one or more fillings of, and further being selectively controlled by the selected size of said second, auxiliary tube; evacuating and heating the loose metal powders having been previously admitted into the primary tube-chamber to eliminate substantially all air, moisture and other gas particles from within the chamber per se and from the surfaces of the metal powders; sealing off the open outer end of the second, auxiliary tube at a position thereof adjacent or substantially adjacent its entry into its mounting-second, metal end piece, while simultaneously maintaining the evacuation being applied to the primary tube-chamber, by way of the vacuum pump and vacuum line adapted to be interconnected with the opposite outer, projecting end of said second, auxiliary tube, until the sealing off operation has been completed; and finally deforming said first, primary tube, as by swaging, a predetermined amount to thereby reduce both the outside and inside diameters a proportional amount relative to each other to thereby squeeze and thus compact together the loose metal powders within the primary tube-chamber into a solid mass exhibiting a given degree of porosity previously determined and specifically controlled by initially pre-selecting the material, diameter and wall thickness of the particular primary tube being deformed, as well as the particular material and size of the loose metal powders being compacted, and thereafter controlling the degree of deformation being applied respectively to both the outside and inside diameters and already found to give a particular porosity to the compacted metal powders in a test sample thereof.

3,892,031

METHOD OF CAPTURING SCREW FASTENER

Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Lester, Pa.

Continuation of Ser. No. 241,194, April 5, 1972, abandoned. This application Mar. 15, 1974, Ser. No. 451,466
Int. Cl. B23p *11/00*
U.S. Cl. 29—437 10 Claims

1. A method of removably securing a panel or the like to another member by means of a fastener assembly which includes:

A. A screw having a shank and an enlarged head;

a. said diameters; having a raised threaded portion having major and minor diameterse;

b. a non-threaded throat portion between said head and said threaded portion, said throat portion having a diameter not larger than the minor diameter of said threaded portion;

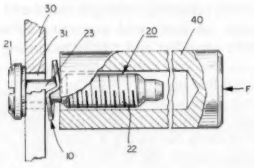
B. A closed annular washer for retaining said screw captive in said panel, said retaining washer being of readily deformable material and having a center aperture having a diameter corresponding to the minor diameter of said threaded portion;

a. said washer being continuous;

b. said washer being helical at its outside diameter portion as well as at its inside diameter portion;

Said method including the steps of:

C. Providing a hole in said panel;



D. Inserting the shank of said screw through said hole, the enlarged head of said screw being larger in cross dimension than the cross dimension of said hole and not passing therethrough;

E. Threading said helical washer over the threaded portion of said shank onto said non-threaded throat portion;

F. Applying a force in the axial direction against the outside diameter portion only of said helical washer to flatten said entire annulus against the panel, thereby to make said washer captive on said throat portion of said screw between the panel and said threaded portion and not removable by unthreading over said threaded portion.

3,892,032

METHOD FOR FORMING CONDUITS HAVING A CONTINUOUS CORROSION-RESISTANT LINING

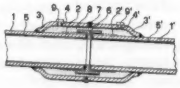
Luigi Bagnulo, Via Alessandro Volta No. 18, Milan, Italy

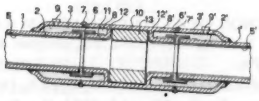
Division of Ser. No. 270,571, July 10, 1972, Pat. No. 3,843,170. This application Apr. 24, 1974, Ser. No. 463,780

Claims priority, application Italy, July 9, 1971, 26857/71

Int. Cl. B21d *39/00*

U.S. Cl. 29—455 **8 Claims**





1. A method of connecting metal pipe sections to form a continuous conduit for conveying corrosive liquids therethrough comprising the steps of integrally connecting a pair of sockets respectively at one end to each pipe section spaced from the respective end of the latter with the other end of each socket projecting beyond the respective pipe end, each of said sockets having at said one end an inner diameter substantially equal to that of the outer diameter of the respective pipe section and at the remainder thereof a greater inner diameter; providing a corrosion-resistant coating on the inner surface of each pipe section which covers also the end faces thereof and part of the outer surface located within the socket; providing a sleeve of a material resistant to heat and to the corrosive influence of the liquid to be conveyed between facing ends of two pipe sections; and connecting the other ends of said sockets by at least one weld seam, said sleeve having a portion located inwardly of said weld seam, whereby damage to the coating by the heat during forming of the weld seam is prevented.

3,892,033

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

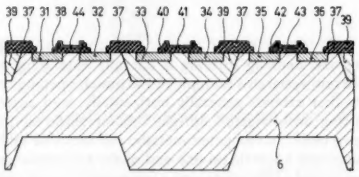
Else Kooi, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 111,357, Feb. 1, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 308,033

Claims priority, application Netherlands, Feb. 5, 1970, 7001607

Int. Cl. H01l *7/50*

U.S. Cl. 29—576 **6 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

a. providing a semiconductor wafer comprising a first layer of low-ohmic material having a plane surface and a second layer of high-ohmic monocrystalline semiconductor material of a first conductivity type disposed on said plane surface, said second layer comprising a major surface and at least one recess at said major surface, said recess extending only partially through said second layer;

b. depositing a further semiconductor layer having one of said first conductivity type and a second conductivity type at said high-ohmic second layer to fill said recess and to form a semiconductor junction with said second layer, at least that portion of said further semiconductor layer disposed at said recess being monocrystalline;

c. removing a portion of said semiconductor wafer from the opposite major surface of said semiconductor wafer by selective electrolytic etching of said low-ohmic first layer to said plane surface to reach said second layer and thereafter chemically etching a portion of said second layer to at least said monocrystalline semiconductor material deposited at said recess; and

d. forming a semiconductor circuit element in at least one of said deposited monocrystalline semiconductor material and said second layer.

3,892,034

METHOD OF ASSEMBLING SLOTLESS STATOR OF ELECTRICAL MACHINE

Mikhail Alexandrovich Arakelov, ulitsa Oktyabrskaya, 303; Eduard Galaktionovich Gersamia, ulitsa Oktyabrskaya, 34, kv. 14.; Tengiz Grigorievich Zedgenidze, prospekt 1, Chavchavadze, 76, and Gennady Pavlovich Nozadze, ulitsa Lenina 76, all of Tbilisi, U.S.S.R.

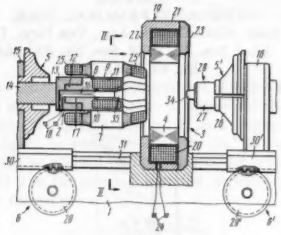
Filed Feb. 26, 1974, Ser. No. 445,998

Int. Cl. H02k *15/02*

U.S. Cl. 29—596 **2 Claims**

1. A method of assembling a slotless stator of an electrical machine provided with an active distributed layer whose coil groups are cemented to a stator yoke, comprising the following steps to be effected in the described succession:

a. bringing preliminarily manufactured coil groups to an assembling template in a number required for the provision of the active distributed layer of the slotless stator of the electrical machine under assembly;
b. establishing a stationary magnetic field to magnetize the assembling template;
c. fixing the coil groups by a stationary magnetic field on the assembling template to assure their given relative positioning;
d. accomplishing all electrical connections resulting in the provision of the active distributed layer;
e. coating a surface of the yoke of the slotless stator under assembly with a cementing compound;



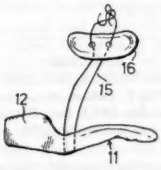
f. introducing the assembling template with the coil groups disposed thereon inside the yoke of the slotless stator under assembly;
g. establishing a magnetic field to magnetize said yoke while the assembling template is freed of its magnetic field to effect a simultaneous transfer of all the coil groups of the active distributed layer onto the surface of the yoke and their pressing with a force sufficient for holding thereof in the course of cementing;
h. curing the slotless stator under assembly during a time period sufficient for polymerization of the cementing compound;
i. removing the magnetic field from the side of the yoke;
j. and forming head portions of the coil groups by bending said head portions toward the end faces of the yoke of the stator under assembly and pressing.

3,892,035

METHOD AND DEVICE FOR MINIMIZING OR ALLEVIATING THE EFFECTS OF LOSS OF TEETH IN ANIMALS

Russell George Hall, and Keith Lea, both of Colwyn Bay, Wales, assignors to Alan George Hall, Llaududno, Wales

Filed July 26, 1973, Ser. No. 383,018
Claims priority, application United Kingdom, July 27, 1972, 35069/72
Int. Cl. A61c *5/08*
U.S. Cl. 32—12 **16 Claims**



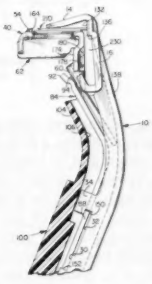
1. A method for alleviating the effects of loss of teeth in the lower front jaw portion of a sheep by facilitating the gripping of feedstuff by the sheep which, for feeding, is dependent on a hard surface gripping against a soft surface, comprising insertion of at least one moulded plate into the mouth of the sheep and securing the plate in position against the palate and upper jaw of the sheep by passing tie means through the soft tissue only of the sheep adjacent the jaw thereof, said tie means being secured to said plate and externally of said soft tissue, said plate being formed so as to reduce the free space between the upper and lower jaws of the sheep and to provide a hard surface to enable the sheep to feed.

3,892,036

SAFETY RAZOR

Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.

Filed June 4, 1973, Ser. No. 366,378
Int. Cl. B26b *21/24*
U.S. Cl. 30—62 **8 Claims**

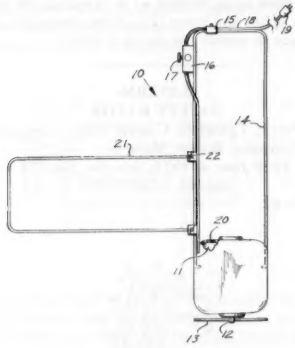


1. An injector type razor comprising
a main frame member that includes a transversely extending cap portion and a depending handle portion,
a platform structure mounted for movement relative to said main frame member and adapted to support a blade unit against the underside of said cap portion,
said platform structure including a platform portion adapted to support a blade unit against the underside of said cap portion,
associated blade aligning structure for locating a blade edge in a predetermined position on said platform portion, and a guard portion of material different than the material of said platform portion positioned forward of said platform portion in spaced relation from the predetermined blade edge position as defined by said blade aligning structure, said guard and platform portions each including a reference surface and said platform portion including deformable structure which is placed in firm frictional engagement with a surface of said guard portion to secure the two said reference surfaces firmly in engagement with one another,
a ramp surface integral with said platform structure and extending downwardly from said platform portion at a rearwardly inclined angle thereto,
and a biasing member secured to said handle portion and flexed in slidable engagement against said ramp surface, effective to urge said platform structure rearwardly to urge said blade aligning structure rearwardly into engagement with an edge portion of a blade unit on the platform portion and simultaneously to urge said platform structure upwardly to secure the blade unit on said platform portion against the underside of said cap portion in proper shaving position and to permit sliding of said ramp surface along said biasing member to release the blade unit on said platform portion in response to insertion of the key of a blade injector magazine between said main frame member and said platform structure.

3,892,037
GRASS CUTTING, TRIMMING AND EDGING DEVICE

Jimmy L. Brown, Gen. Del., Silverton, Oreg. 97381

Filed Nov. 23, 1973, Ser. No. 418,666
Int. Cl. B26b 7/00, 27/00
U.S. Cl. 30—276 1 Claim

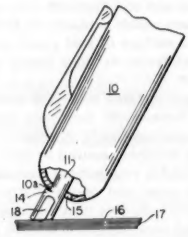


1. A grass trimming, edging and cutting device, comprising in combination, an electric motor, a motor shaft driven by said motor, a nylon cord secured at its longitudinal center on said shaft for rotation therewith in order to cut blades of grass, a first U-shaped handle secured at its ends to said motor and extending upwardly about an axis of said motor, said first U-shaped handle comprising parallel, spaced apart legs and an intermediate leg therebetween, a second U-shaped handle removably supported at its ends on one said leg of said first U-shaped handle by means of wing nuts and bolt fasteners, said second U-shaped handle extending horizontally at right angle respectively to said first U-shaped handle, said first U-shaped handle also supporting a speed control rheostat and a switch, said rheostat and switch being along an extension cord from said motor and a free end of said extension cord having a plug for connection to an electric source.

3,892,038
SINGLE SHEET PAPER SLITTER

Phillip J. Novak, 3123 Lehman Ave., Salt Lake City, Utah 84119

Filed June 25, 1973, Ser. No. 373,242
Int. Cl. B26b 29/00
U.S. Cl. 30—294 5 Claims

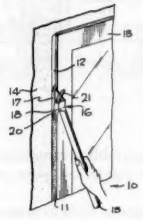


1. A writing instrument device for cutting a single sheet of paper at a time without danger of cutting the user, comprising a ballpoint pen having an elongate pen body, and a manually-depressible plunger extending axially of said pen body, with an exposed end of said plunger projecting through an opening in an end of said pen body and surrounded by a lip defining said opening, for extending and retracting a ballpoint at the other end of the pen body, said exposed end of the plunger serving as a blade-holding member and having a gauging surface adapted to be pressed flatwise against and drawn across a sheet of paper to be cut; and a blade fixedly secured in and having a cutting edge sloping down to and terminating at said surface and protruding therefrom a distance substantially equal to the thickness of a sheet of paper to be cut, said surface having an area flanking said blade and sufficient in extent to serve as a gauge that limits penetration of said blade to a single sheet of paper and prevents penetration of said blade into the skin of a user when said plunger is finger-operated to extend or retract the ballpoint.

3,892,039
COMPOUND REMOVAL TOOL

Fred W. Fisher, 6207 Costello Ave., Van Nuys, Calif. 91401

Filed Jan. 21, 1974, Ser. No. 434,866
Int. Cl. B26b 3/00
U.S. Cl. 30—279 R 5 Claims



1. A tool for removing sealing compound or the like comprising the combination of:
an elongated handle;
a tool head fixly secured to one end of said handle;
said tool head comprising:
a body having a substantially V-shaped cross section sidewalls formed with an open-ended passageway extending along its entire length for accommodating a continuous strip of removed sealing compound;
said body further provided with at least two pointed ends defined by upwardly, angularly sloping cutting edges leading toward said one end of the handle;
said body is composed of a thin-walled sheet folded about a base line extending along the center of said head and constituting the apex of said V-shaped cross section whereby said two pointed ends are defined at the opposite ends of said base line lying in the plane of longitudinal center axis of said head and are defined by cutting edges upwardly diverging from said two pointed ends respectively;
said open-ended passageway is defined by the interior opposing surfaces of said sidewalls of said body;
said body further includes an outwardly flared attachment portion interconnecting said sidewalls to said handle; and said cutting edges extending from each of said two pointed end and said base line are angularly disposed with respect to each other.

3,892,040
TOOTHPICK HOLDER

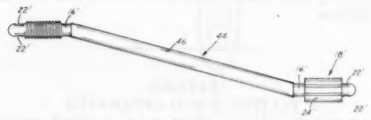
John C. Marquis, 13796 E. Dakota Ave., Aurora, Colo. 80012

Filed Mar. 26, 1973, Ser. No. 344,588
Int. Cl. A61c 3/00
U.S. Cl. 32—40 R 5 Claims

1. A dental appliance for releasably holding a toothpick and the like for cleaning between the teeth, said dental appliance comprising:
an elongated body having a handle portion and a solid, generally cylindrical forward extension adjacent to one

end of the body, said forward extension including a transverse passage therein, said passage being wedge-shaped in cross-section and tapering outwardly away from said handle, and

gripping collar means including a raised annular edge for wedging a toothpick in the wedge-shaped passage, said gripping collar means being threaded on said forward



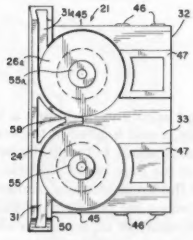
extension for threaded advancement of said raised annular edge against the toothpick to urge the toothpick into the outwardly tapering portion of said passage whereby the toothpick is positively held in said passage by the raised annular edge of said gripping collar means and the toothpick can be inserted into the mouth for cleaning between the teeth.

3,892,041

DRAFTING BOARD STRAIGHT EDGE ASSEMBLY

William A. Adair, Des Plaines, and Richard F. Pollowy, Schaumburg, both of Ill., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Mar. 11, 1974, Ser. No. 449,958
Int. Cl. B43l *13/02*
U.S. Cl. 33—80 **3 Claims**



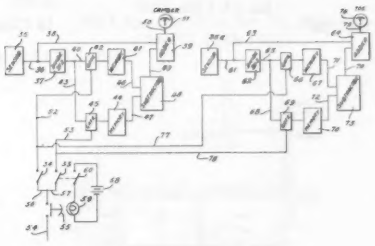
1. In a straight edge assembly for cord mounting on a drafting board the improvement comprising a permanently assembled body including an edge providing portion and a grasping portion, and a pulley block unit located at each end of said assembly which is manually removable and replaceable without the use of tools, each said pulley block unit including an integrally formed pulley block and at least one sheave mounted therein, said block having an end cap portion for covering at least a part of the end of said body, a sheave mounting portion adjacent said end cap portion including a spindle on which said sheave is mounted and retained in place by said contiguous body part, a recess through which said mounting cord passes, and means for frictionally retaining each said pulley block unit to a contiguous body part at the end of said assembly and allowing releasable sliding engagement therebetween including a nub extending from an outside surface of said portion which frictionally engages said contiguous body part.

3,892,042

ELECTRONIC RUN-OUT COMPENSATOR AND METHOD OF ELECTRONICALLY COMPENSATING FOR WOBBLE RUN-OUT IN A ROTATING BODY

David A. Senften, Florissant, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.

Continuation-in-part of Ser. No. 235,599, March 17, 1972. This application Jan. 14, 1974, Ser. No. 433,212
Claims priority, application United Kingdom, Jan. 31, 1973, 4972/73
Int. Cl. G01b *11/26*
U.S. Cl. 33—301 **8 Claims**



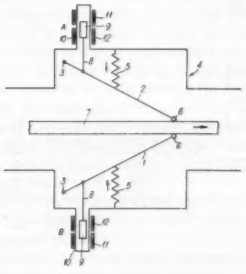
1. A method for finding the wobble run-out of a rotary body relative to its true axis of rotation, said method consisting in providing a pair of signal generating sensor means sensitive to orientation of the rotary body at 90° to each other, rotating the body into two predetermined positions 180° apart to generate corresponding sensor signals at each said position of the body, said signals being separate and independent and indicative of the body orientation at said predetermined positions, and electronically subtracting the sensor signals corresponding to the positions 180° apart to find the wobble run-out relative to the true axis of rotation, and displaying the sensor signals, corrected by half the difference obtained from said signal subtraction, as an angular relation between the true axis of rotation and the desired axis.

3,892,043

OBSERVATION METHOD AND EQUIPMENT

Zbigniew Bonikowski, London, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed Dec. 4, 1973, Ser. No. 421,737
Claims priority, application United Kingdom, Dec. 7, 1972, 56427/72
Int. Cl. G01c *7/04, 7/12*
U.S. Cl. 33—143 L **17 Claims**



10. Measuring apparatus suitable for sensing the position of a surface of an extruded product passing through an enclosure as it is being formed comprising a feeler which is connected to means for moving a ferromagnetic element located within

the enclosure in response to movements of said feeler, means for biassing said feeler into contact with said surface and electromagnetic detecting means located outside the enclosure for detecting the position of said ferromagnetic element.

3,892,044

METHOD AND APPARATUS FOR COOLING

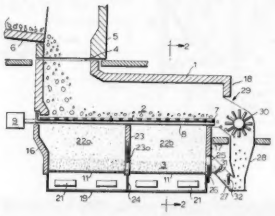
Karl-Heinz Kayatz, Hamburg-Nienstedten, Germany, assignor to Claudius Peters AG, Hamburg, Germany

Filed Feb. 13, 1974, Ser. No. 442,253

Claims priority, application Germany, Feb. 14, 1973, 2307165

Int. Cl. F26b *7/00*

U.S. Cl. 34—20 **10 Claims**



1. A method for cooling mixed coarse and fine granular solids from a burning process comprising

a. classifying the mixed solids in a bed in an upper zone;

b. collecting the finer of the classified solids in a fluidized bed at a lower zone;

c. passing a cooling gas first through said fluidized bed;

d. subsequently passing said cooling gas from said fluidized bed in countercurrent heat exchange with the fines being passed from the classifying step toward the fluidized bed;

e. thereafter passing the cooling gas from the countercurrent exchange step in cross-flow through said classifying bed, and

f. introducing said cooling gas from said cross-flow step to the burning process as preheated gases.

3,892,045

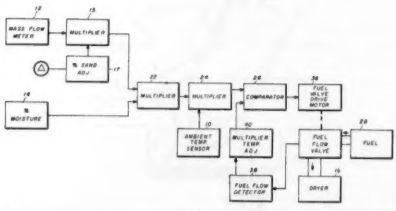
FUEL ALLOCATION SYSTEM AND METHOD FOR INDUSTRIAL DRYERS AND THE LIKE

William T. Hage, Orlando, and Emanuel J. Elliott, Altamonte Springs, both of Fla., assignors to Mechtron International Corporation, Orlando, Fla.

Filed May 10, 1974, Ser. No. 468,993

Int. Cl. F26b *3/00*

U.S. Cl. 34—28 **26 Claims**



1. In combination:

means for measuirng the mass flow rate of a moving material and providing a first output representative thereof;

means for measuring the amount of moisture in said material and providing a second output representative thereof;

means for heating said material; and

means for regulating said heating means responsive to said first and second outputs.

26. A method for regulating the amount of heat in a heater adapted for drying a moving aggregate, said method comprising the steps of:

measuring the mass flow rate of said aggregate and providing a first output representative thereof:

measuring the amount of moisture in said aggregate and providing a second output representative thereof; and

regulating said heater responsive to said first and second outputs.

3,892,046

FLUIDISED BED APPARATUS

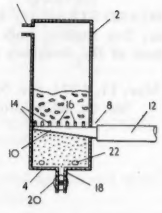
Michael Jonathan Cooke, Cheltenham, England, assignor to Coal Industry (Patents) Limited, London, England

Filed May 14, 1974, Ser. No. 469,637

Claims priority, application United Kingdom, June 8, 1973, 27325/73

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 A **6 Claims**



1. Fluidised bed apparatus including a body, a base connected to the body, a grid located in the body above the base to define a discharge space between the base and the grid, a discharge outlet in the base below the grid, the grid comprising a plurality of fluidising medium manifolds, and fluidising medium inlet means on the manifolds of the grid, means spacing said manifolds apart so as, in use, to allow the passage of agglomeraed particles through the grid between the manifolds into said discharge space and then through the discharge outlet.

3,892,047

APPARATUS FOR DRYING CLOTHES

Wolf Georg Müller-Scherak, Vincenz-State-Str. 8, 5 Cologne 41, Germany

Filed May 15, 1974, Ser. No. 470,190

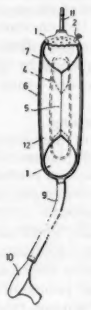
Claims priority, application Germany, May 18, 1973, 2325150

Int. Cl. F26b *25/00*

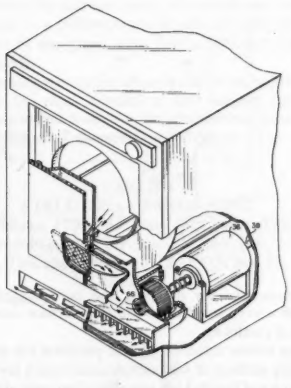
U.S. Cl. 34—103 **10 Claims**

1. Apparatus for drying clothes such as skirts, dresses, pants or the like comprising a body contoured to the general configuration of a garment to be placed thereover, said body being constructed from collapsible, foldable, air impermeable material, means for introducing air into said body to inflate the same to a desired inflated configuration, an envelope in external telescopic relationship to said body, said envelope being

constructed from air permeable material, and means for introducing air into said envelope between the latter and an exterior of said body whereby air exiting through said envelope permeable material will dry a garment telescoped thereover.



3,892,048
CLOTHES DRYER
Jerome G. Jacobsen, Jr., Mansfield, Ohio, assignor to White-Westinghouse Corporation, Cleveland, Ohio
Filed May 29, 1974, Ser. No. 474,286
Int. Cl. F26b *11/04*
U.S. Cl. 34—133 **7 Claims**



1. An improved air circulation system for a clothes dryer having a cabinet structure housing a rotatable clothes basket with a forwardly facing opening, drive means for rotating said basket, said cabinet including a front panel having a first opening comprising an access opening generally concentric with said basket opening, a second opening generally subadjacent said access opening and a third opening spaced from said second opening, a door hingedly mounted on said panel for covering both said first and second openings when said door is in a closed position and means including said door and said front panel defining a confined air flow passage between said first and second openings on the forward face of said front panel when said door is closed and wherein the improvement comprises:

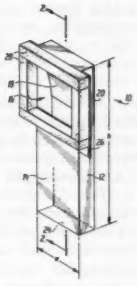
a molded one-piece air duct and fan scroll defining in cooperation with the inner face of said panel

an air inlet chamber in effective sealing engagement with said panel surrounding said second opening;

an air exhaust duct in effective sealing engagement with said panel surrounding said third opening, and;

a fan scroll means for housing a rotatable fan, said means having a wall common to both said inlet chamber and said exhaust duct including an inlet opening between said inlet chamber and said fan housing and an outlet between said housing and said exhaust duct.

3,892,049
CLOTHES DRYER VENT ATTACHMENT
Paul Adams, Jr., Hwy. 49 East, P. O. Box 207, Yazoo, Miss. 39194
Filed Apr. 11, 1974, Ser. No. 460,087
Int. Cl. F26b *19/00*
U.S. Cl. 34—235 **6 Claims**



1. A clothes dryer vent attachment adapted to be mounted upon the rear wall surface of a clothes dryer appliance within a limited spacial environment, such as for example, a mobile home, comprising:

a clothes dryer appliance disposed within said mobile home;

elongate, substantially flat, hollow housing means for defining a vent shaft, the width of said housing means being several times greater than the depth of said housing means;

said housing means including uniplanar front and rear wall surfaces;

exhaust air inlet means defined within said front surface of said housing for receiving said exhaust air from said appliance which is exhausted through an exhaust air outlet defined within said rear wall surface of said appliance;

baffle means disposed interiorly of said housing and opposite said exhaust air inlet means for deflecting said exhaust air into said shaft;

means for securing said housing to said appliance in a vertically disposed fashion whereby said front surface of said housing will be flush with said rear wall surface of said appliance; and

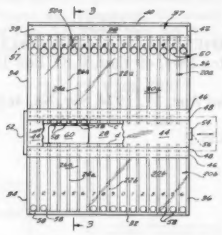
exhaust air outlet means defined within the lower end portion of said shaft, said lower shaft portion being adapted to be inserted through the floor of said mobile home when said appliance and said attachment secured thereon are disposed near a particular wall of said mobile home,

said housing shaft thereby having an exhaust air volumetric capacity equal to that of conventional vent attachments yet permitting said appliance to be positioned relatively flush with respect to said particular wall of said mobile home.

3,892,050
DEVICE FOR TEACHING

Frank Micciche, Floral Park, N.Y., assignor to Frank Micciche, Floral Park, N.Y.

Filed Mar. 21, 1974, Ser. No. 453,519
Int. Cl. G09b *1/02*
U.S. Cl. 35—8 R **12 Claims**



1. A teaching aid for improving indirect observation skills comprising, in combination, means defining a plurality of channels intersected by a main channel, exclusive thereof, through which they communicate, means for blocking at least a portion of said intersecting channel from view, whereby at least one test object, adapted to block at least one channel of said plurality, can be hidden from view in said intersecting channel and indirectly observed by guiding a projectile in each respective channel of said plurality and by determining in which channels of said plurality the movement of said projectile therethrough is affected, whereby by observing said movement a hypothesis can be formed as to the identity of the test object, the forming of said hypothesis being helpful for improving indirect observation skills; and at least one test object for use in said teaching aid, wherein said test object has a generally straight surface adapted to stop a projectile in a channel, whereby said hypothesis can be formed by determining in which channels of said plurality the projectile is stopped.

3,892,051
SIMULATED COLLIMATION OF COMPUTER GENERATED IMAGES

William M. Bunker, Ormond Beach, Fla., assignor to General Electric Company, Fairfield, Conn.

Filed Oct. 31, 1973, Ser. No. 411,519
Int. Cl. G09b *9/08*
U.S. Cl. 35—12 N **1 Claim**

1. In an aircraft trainer apparatus for simulating a view of a distant three-dimensional environment by a nearby numerically controlled two-dimensional presentation, comprising:

a. a store of numerical data descriptive of the environment, comprising numerically encoded geometric and visual parameters of the environment together with their three-dimensional coordinates therein;

b. a two-dimensional viewscreen adapted to be controllably illuminated at numerically described viewpoint coordinates;

c. a store of numerically encoded view window data descriptive of the attitude and location relative to the environment recited in (a) of a fictitious aircraft view window which is simulated by the viewscreen;

d. data processing means connected to the store of environmental data recited in (a) and to the store of view window data recited in (c) to receive data from the said two stores and to calculate therefrom the viewscreen coordinate points which, referred to a given observer viewpoint, simulate points in the environment visible through the view window from a given fictitious station point, and to control the viewscreen to be illuminated at those points to simulate the encoded visual parameters of the simulated points;

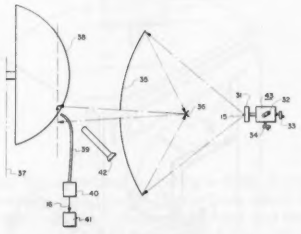
the improvement comprising:

e. linear displacement measuring means for measuring three-dimensional displacements of an observer from the given observer viewpoint recited in (d), and for generating responsively thereto numerical signals respresentative of the said displacements, connected to data processing means recited in (d), which responsively thereto calculates the viewscreen coordinate points which, referred to the observer viewpoint displaced from the given observer viewpoint, simulate points in the environment visible through the view window from a correspondingly displaced fictitious station point, and to control the viewscreen of said aircraft trainer to be illuminated at those points to simulate the encoded visual parameters of the simulated points.

3,892,052
BRIGHTNESS CONTOUR PLOTTER

Franklin C. Wolfgram, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 3, 1974, Ser. No. 466,766
Int. Cl.[2] G01J *1/42*
U.S. Cl. 356—121 **6 Claims**



1. An apparatus for mapping the contours of a sample source with a very small light emitting surface comprising:

an optical platform;

mounting means attached to said platform for securing the emitting surface of said sample source in a level position;

a short focal length high magnification optical lens system mounted on said platform with its optical axis normal to said emitting surface;

a pantograph mounted on said platform parallel to said emitting surface spaced therefrom a small distance greater than the distance from said platform to the image of said surface formed by said optical system and having demagnification and magnification pivot points;

a light sampling means attached to said demagnification pivot point to measure the light emitted by a small fractional area of said emitting surface and to display said measurement;

a hemispherical reflector probe attached to said demagnification pivot point facing said emitting surface and intersecting said image thereof;

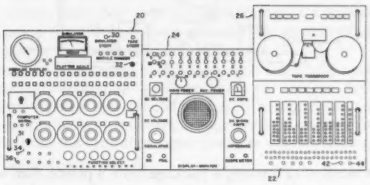
a light to direct current conversion and direct current display device mounted on said platform; and

an optical light conducting fiber interconnecting said probe and said conversion and display device.

3,892,053
PROGRAMMABLE PSYCHOMOTOR TASK SIMULATOR SYSTEM

Harold R. Booher, Garrett Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1974, Ser. No. 436,227
Int. Cl.[2] G09B *19/00*
U.S. Cl. 35—22 R **7 Claims**

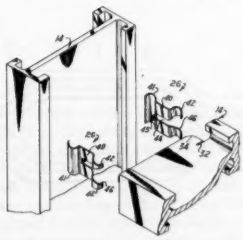


1. A psychomotor task simulator to measure the relative effectiveness of different presentation techniques comprising:
an array of controls and displays arranged to give a sense of reality to a test subject such that the setting is readily generalizable to actual man-machine interface situations;
diode matrix means connected to said array for energizing the controls and displays in a plurality of selective manners in order to allow the programming of a plurality of consecutive tasks;
subject control means for making a response in accordance with a set of instructions and for altering the diode matrix connections so that said array of controls and displays are energized in a different one of said plurality of selective manners of energization so that a different task may be performed;
experimenter controls for altering the diode matrix connections in the same manner as said subject controls and including means for preventing the subject from changing the diode matrix connections if desired.

3,892,054
STRUCTURAL PANEL JOINT

Robert P. Matson, 1790 Old Tasso Rd., Tasso, Tenn.

Continuation-in-part of Ser. No. 227,883, Feb. 22, 1972, abandoned. This application Nov. 2, 1973, Ser. No. 412,170
Int. Cl. E04c *2/42*
U.S. Cl. 52—665 **6 Claims**

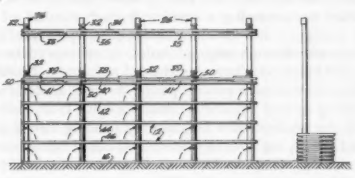


1. A structural building panel including:
A plurality of beam elements interlocked together to form an open grid frame, all of said beam elements having the same general cross-sectional configuration including a central web, a pair of flanges along opposite edges of said central web, and a pair of inwardly turned lips along opposite edges of each of said flanges; said beam elements defining an inwardly opening locking recess between said central web, each said flange and each said lip; certain of said beam elements including a tongue formed on the end of said central web projecting beyond the ends of said flanges and lips of said certain beam elements; and, each of said tongues sized to be slidably received between opposed said lips on the same side of said central web of another of said beam elements and defining outwardly opening notches in opposite edges thereof; and,
resilient interlocking means carried by opposite sides of each of said tongues attaching said certain beam elements to said another beam element, each of said resilient interlocking means comprising:
a resilient body defining a slot therein, said central web of said certain beam element received in said slot and said body adjacent said slot engaging said central web of said certain beam element to laterally locate said interlocking means with respect to said central web of said certain beam element;
a resilient locking tab on said body slidably received in said notch in said tongue of said certain beam element to locate said resilient interlocking means with respect to said tongue; and,
resilient retaining means on said body adjacent said slot engaging said flange of said certain beam element to maintain said locking tab within said notch.

3,892,055
METHOD FOR MANUFACTURING MULTI-STORY HOUSING WITH FLOOR-SLABS, BEARING WALLS AND PARTITIONS CAST ON THE GROUND LEVEL

Torsten Nickolaus Ljung, Hognasvagen 15, 181 43 Lidingo, Sweden

Filed Jan. 27, 1971, Ser. No. 110,162
Int. Cl. E04g *21/14*; **E04b** *5/02*
U.S. Cl. 52—745 **2 Claims**



1. In the method of erecting and constructing multi-story buildings, at the construction site, whereby the ceiling and flooring elements are supported on vertically-disposed bearing walls and in which the elements may be manufactured in horizontal relation by casting on site, and in which the elements are erected to their installed positions by pivoting the bearing walls to a vertical position between the floor and ceiling elements, characterized by the steps of:
A. temporarily installing a plurality of removable columns in geometric arrangement relative to the size and shape of the building being erected;
B. pivotally connecting adjacent edges of certain of the bearing elements and floor and ceiling elements;
C. elevating certain of the bearing elements and floor and ceiling elements, as a sandwiched unit, relative to the temporary columns and temporarily retaining them thereat whereby the elements have sufficient strength in their sandwiched relationship to resist strains placed thereon;
D. pivoting the bearing elements into vertical load-bearing relation relative to the floor and ceiling elements;
E. lowering the floor and ceiling elements into simple beam-supported relationship relative to said bearing elements; and
D. removing the temporary columns whereby the primary bearing load support, ceiling and floor skeleton of the

building is assembled without using columns and the like in the multi-story building.

3,892,056

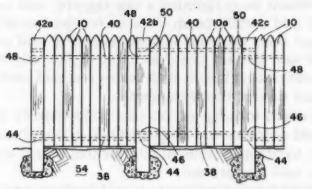
METHOD OF CONSTRUCTING A BOARD-TYPE FENCE

William C. Mann, P.O. Box 263, Broken Arrow, Okla. 74012

Continuation-in-part of Ser. No. 319,216, Dec. 29, 1972. This application Aug. 15, 1973, Ser. No. 388,614

Int. Cl.[2] E04B *1/00*

U.S. Cl. 52—745 **3 Claims**



1. A method of constructing a board-type fence without nails and bolts from a plurality of substantially identically sized fence boards and a plurality of substantially identically sized fence posts which comprises assembling a plurality of first fence panels, each first panel being assembled by arranging a predetermined number of fence boards in aligned side-to-side relation, passing a pair of spaced parallel rods through aligned holes in said predetermined number of fence boards so that the rod ends project outwardly from the sides of each first panel, the rods in each first panel being spaced a predetermined distance from each other and at predetermined distances from a reference end of said first panel, assembling a plurality of second fence panels, each second panel being assembled by arranging a predetermined number of fence boards in aligned side-to-side relation, passing a pair of spaced parallel rods through aligned holes in said predetermined number of fence boards so that the rod ends project outwardly from the sides of each second panel, the rods in each second panel being spaced a predetermined distance from each other equal to the predetermined distance of spacing with respect to said first panel, the rods in said second panel being spaced at predetermined distances from a reference end of said second panel which are respectively different from the predetermined distances of the rods of the first panel from the reference end of said first panel, erecting a first fence post with one end thereof in the ground attaching a first fence panel to said first fence post by inserting the rod ends at one end of said first panel into and through a first pair of spaced holes in said first fence post, erecting a second fence post with one end thereof in the ground at the opposite end of said first panel from said first fence post and attaching said second fence post to said first fence panel by inserting the rod ends at said opposite end of said fence panel into and through a first pair of spaced holes in said second fence post, attaching a second fence panel through said second fence post on the opposite side thereof from said first fence panel by inserting the rod ends into and through a second pair of spaced holes in said second fence post, said second pair of holes in said second fence post being offset with respect to the first pair of holes thereof, erecting a third fence post at the opposite end of said second panel from said second fence post and attaching said third fence post by inserting the rod ends at said opposite end of said second panel into and through a pair of spaced holes in said third fence post and repeating the operation by alternating first and second fence panels on opposite sides of each intermediate fence post with the rod ends of each first fence panel being inserted into and through a pair of holes in said intermediate fence post offset from a pair of holes provided for the rod ends of said second fence panel.

3,892,057

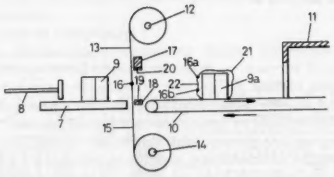
PACKAGING METHOD AND APPARATUS

Jeffrey Leonard Goode, Sandy, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 11, 1973, Ser. No. 405,456

Int. Cl. B65b *61/18*

U.S. Cl. 53—14 **5 Claims**



1. A method of forming a package from a plastic-film wrapper provided with a tear-tape heat sealed along each edge to the film by an edge-to-edge seam that comprises: advancing an article to be wrapped into a curtain formed by a web of heat-shrinkable plastics film and a web of the tear-tape material drawn from opposite sources and transversely heat-sealed together to form a continuous curtain across the path of the article; further advancing the article, with withdrawal of said webs from their sources, until the curtain extends round the article to beyond its trailing end, the tear-tape material being withdrawn from its source at a linear speed not exceeding one-fourth of the linear speed of withdrawal of the heat-shrinkable plastics film; transversely heat-sealing and severing the two webs together behind the article so as to leave, on one side of the line of severance, the article at least partially enveloped in a sleeve formed from the webs and on the other side the two webs sealed together to form again a curtain; and subjecting the sleeve to heat sufficient to shrink it upon the article.

3,892,058

PROCESS FOR THE PREPARATION OF HIGH-TEMPERATURE SHORT-TIME STERILIZED PACKAGED ARTICLES

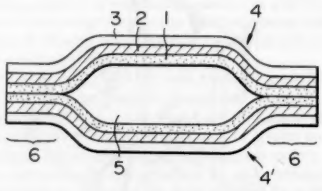
Yoshihiro Komatsu, and Kanemichi Yamaguchi, both of Yokohama, Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed Sept. 20, 1973, Ser. No. 399,346

Claims priority, application Japan, Sept. 22, 1972, 47-95314; Dec. 13, 1972, 47-124393

Int. Cl. B65b *55/02*

U.S. Cl. 53—21 FC **24 Claims**



1. A process for the preparation of high-temperature short-time sterilized packaged articles which comprises the steps of providing a flexible container having a heat-sealable resin film at least on an area to be heat sealed of the inner surface thereof with the heat sealable resin being a crystalline thermoplastic resin having a softening or melting point of from 130° to 250° C., filling an article to be sterilized in the flexible container, removing non-condensable gases present in interior

voids of the flexible container, hermetically sealing the flexible container by application of heat in such a manner that the coefficient of flatness in the resulting sealed packaged article is maintained at a level not exceeding 0.25, said coefficient of flatness being defined by the following formula

$$K_F = \frac{l}{L}$$

in which l indicates a maximum thickness (cm) in the sealed packaged article, L designates a maximum distance (cm) across the surface of the container, and K_F stands for the coefficient of flatness,

maintaining the sealed packaged article for 1 to 8 minutes in a heating medium of a temperature of 130° to 160°C. to thereby sterilize the article packaged in the container, and cooling the so heat-treated packaged article under a pressure higher than the saturated vapor pressure corresponding to the sterilization temperature.

3,892,059

WRAPPING OF ARTICLES IN A TUBULAR WRAPPING MATERIAL

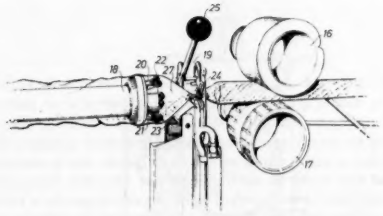
Sven Holger Widigs, Morbyvagen 13, S 780 10 Gustafs, Sweden

Continuation-in-part of Ser. No. 205,122, Dec. 6, 1971, abandoned. This application May 17, 1974, Ser. No. 471,169

Claims priority, application Sweden, Dec. 11, 1970, 16840/70

Int. Cl. B65b *43/00, 9/10, 7/12*

U.S. Cl. 53—29 **15 Claims**



1. A method of wrapping articles in tubular wrapping material, comprising the steps of pleating said tubular material onto the outer surface of an elongated pipe, thereafter feeding a stream of articles to be wrapped into said tube through the interior of said pipe toward an outlet end, continuously rotating said pipe during the feeding of the articles while simultaneously stretching said tubular material radially outwardly of the circumference of said pipe adjacent the outlet end to be out of contact with said pipe and to be conjointly rotated therewith, jointly withdrawing said tubular material and said article from the outlet end of said pipe without rotating the same, said tubular material being thereby twisted relative to said article to continuously enclose said article in a helical wrap, and thereafter sealing and cutting said tubular material when the rear end of said article has passed the outlet of said pipe.

3,892,060

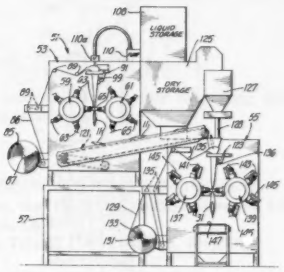
HOT OR COLD PACK AND APPARATUS FOR AND METHOD OF MAKING SAME

Joseph Stanley, Jr., Topanga, Calif., assignor to Kay Laboratories, Inc., San Diego, Calif.

Division of Ser. No. 23,598, March 30, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 290,003

Int. Cl. B65b *41/18*

U.S. Cl. 53—127 **17 Claims**



1. A machine for making a pack for adding heat to, or removing heat from, an object comprising:

a supporting structure;

means for mounting a first elongated strip of heat sealable plastic material on said supporting structure;

a first heat sealing station on said supporting structure;

means for feeding said first strip of heat sealable material to said first heat sealing station to form a plurality of first containers;

means on said supporting structure for depositing a quantity of a first chemical in each of the first containers as each of said first containers is formed;

means at said first heat sealing station for heat sealing said first containers to seal the latter with a quantity of said first chemical therein, said first containers being rupturable;

means for preheating said first chemical to a particular temperature above ambient prior to the sealing and cutting of the first strip to form the plurality of first containers;

means for heating the heat sealing means to a particular temperature above the temperature for heat sealing the first containers to provide for the absorption of heat by the first chemical during the sealing operation;

means for mounting a second elongated strip of heat sealable plastic material on said supporting structure;

a second heat sealing station on said supporting structure;

means for feeding said second strip of heat sealable material to said second heat sealing station to form a plurality of second containers;

means on said supporting structure for depositing a quantity of a second chemical in each of said second containers prior to any sealing of the second containers, said first and second chemicals being chemically reactive to absorb or give off heat;

conveyor means for converging said first containers to said second heat sealing station in timed relationship with the rate of formation of said second containers and for depositing at least one of said first containers in each of said second containers prior to any sealing of the second containers; and

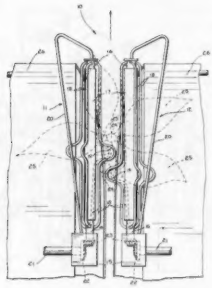
means for heat sealing each of said second containers with each of said second containers having said quantity of said second chemical and at least one of said first containers therein whereby each of said second containers and the contents thereof at least partially forms a pack.

3,892,061

DEFOLIATOR MECHANISM

Andrew Whitley, Highway 64, Zebulon, N.C. 27597

Filed Dec. 18, 1972, Ser. No. 315,907
Int. Cl. A01d *45/16*
U.S. Cl. 56—27.5 8 Claims



1. A defoliating means for removing the leaves from at least a portion of the stalk of a row of plants comprising: a support means moveable along a predetermined path adjacent the row of plants; a rotatable means rotatively mounted to said support means; at least one finger-like elongated, resilient defoliating member fixedly secured at one end only to said rotatable means and extending therefrom where to other end is unsupported and held in cantilever fashion such that said finger-like defoiiating member may flex and move independently of said rotative means as said defoliating member engages leaves on respective plants during the defoliating operation, wherein said rotative means with associated defoliating members are disposed in lateral spaced apart relationship and wherein a plurality of said defoliating members are circumferentially spaced about each rotative means, each defoliating member being of a single piece construction and spaced outwardly from the axis of rotation of the rotative means supporting the respective defoliating member such that an open space lies between each defoliating member and the rotative means supporting the respective defoliating member; and means to rotatively drive said rotatable means whereby said defoliating member can engage and remove leaves from the stalks of the plants as said support moves therepast.

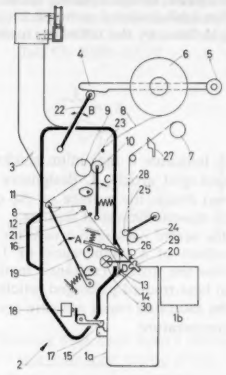
3,892,062

APPARATUS FOR START-SPINNING ON AN OPEN-END SPINNING MACHINE

Fritz Stahlecker, Josef-Neidhart-Strasse 18, D-7341 Bad Uberlingen, and Hans Stahlecker, Haldenstrasse 20, D-7334 Suessen, both of Germany

Filed Apr. 22, 1974, Ser. No. 463,151
Claims priority, application Germany, Apr. 30, 1973, 2321775
Int. Cl. D01h *13/14*
U.S. Cl. 57—34 R 15 Claims

1. An apparatus for start-spinning, movable along an open-end spinning machine to a spinning unit, which returns a thread to a spinning rotor of said spinning unit and removes said thread therefrom again after spinning has been started, containing means for controlling the moment the start-spinning operation is commenced in such a manner that said start-spinning operation is performed during the period in which the previously braked spinning rotor of said spinning



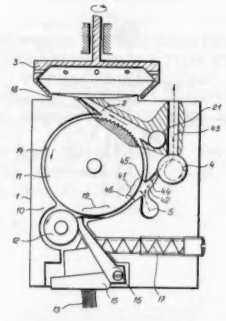
unit starts up and at a speed which is lower than the operating speed of said spinning rotor.

3,892,063

SPINNING MACHINE CONSTRUCTION

Ctibor Doudlebsky; Frantisek Jaros; Frantisek Ferkl; Antonin Cap; Josef Ripka, and Jan Junek, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Orlici, Czechoslovakia

Filed May 30, 1973, Ser. No. 365,165
Claims priority, application Czechoslovakia, June 7, 1972, 3926-72
Int. Cl. D01h *11/00, 1/12*
U.S. Cl. 57—56 7 Claims



1. In an open-end spinning machine construction, a combination comprising a feeding roller for feeding fibers which may contain contaminants; a fiber separating roller for engaging said fibers and advancing them towards a spinning chamber in a predetermined path, said path being constituted of a upstream and an adjoining downstream path section in which said fibers are respectively separated by and doffed from said fiber separating roller; a cleaning slot communicating with said path intermediate said feeding roller and said spinning chamber in the region of a juncture between said path sections; a converging channel communicating with said cleaning slot and being elongated in direction outwardly from said path, said converging channel being bounded by an upstream wall and by a convexly curved downstream deflection wall having a doffing edge adjacent said path, so that the convergence of said converging channel causes said impurities to be

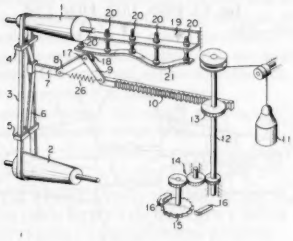
accelerated therethrough away from said cleaning slot; an air channel extending through said upstream wall and communicating with said slot and said converging channel; a collecting chamber substantially tangentially communicating with said converging channel for collecting said contaminants entering the same from said path; and a suction channel communicating with said collecting chamber.

3,892,064

DEVICE FOR COMPENSATING CHANGES IN ROVING WINDING TENSION IN SPINNING MACHINE

Eijiro Araki, Toyoake; Mitsuo Mori, Toyota, and Toshio Morishita, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 14, 1974, Ser. No. 469,886
Claims priority, application Japan, May 25, 1973, 48-58933
Int. Cl. D01h *1/26, 1/36*
U.S. Cl. 57—96 **7 Claims**



1. A device for compensating changes in roving winding tension in a spinning machine, comprising a pair of cone drums mounted for rotation in said spinning machine, a belt-like member stretched around said cone drums to transmit rotation of one of said cone drums to the other, a belt shifter associated with said belt-like member to move said belt-like member along the length of said cone drums, a moving member capable of movement to energize said belt shifter, a link mechanism including at least two link elements pivotably connected together, said belt shifter being connected through said link elements with said moving member, and guide means having a cam surface at a position apart by a predetermined distance from the movement locus of said link mechanism, a part of said link mechanism being engaged with the cam surface of said guide means so that the movement of said moving member is transferred to said belt shifter while being subject to the influence of said cam surface.

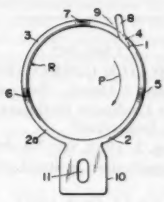
3,892,065

BALLOON CONTROL RING

Hiroyuki Kanai, No. 3-15, Matsunouchi-cho, Ashiya-shi, Hyogo-ken, Japan

Filed May 21, 1974, Ser. No. 471,984
Claims priority, application Japan, June 1, 1973, 48-61695
Int. Cl. D01h *13/04, 13/12*
U.S. Cl. 57—108 **8 Claims**

1. A balloon control ring comprising a ring member made of a wire rod whose portion to be contacted with a yarn has a round shape, said ring member being formed into a corrugation having at least two ridges protruding in the axial direction



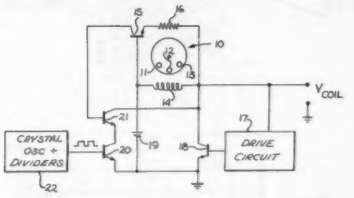
thereof, and a mounting member for supporting said ring member on a machine frame.

3,892,066

SYNCHRONIZED WATCH MOVEMENT

Boyd G. Watkins, San Francisco, Calif., assignor to Microna Inc., Cupertino, Calif.

Filed Feb. 27, 1974, Ser. No. 446,240
Int. Cl. G04b *1/00*
U.S. Cl. 58—28 R **4 Claims**



1. In an electric timepiece containing a balance wheel and drive means for causing such wheel to oscillate at substantially its natural frequency, an improvement comprising:
   a. a coil adjacent such balance wheel and electrically coupled to such drive means;
   b. three magnets mounted on such balance wheel whereby at least one positive and one negative polarity voltage pulse is generated in said coil upon each motion of said magnets past said coil;
   c. a source of synchronizing waves of precisely controlled frequency;
   d. a battery in series with said coil, said battery being coupled such that said negative polarity voltage pulse will increase the voltage across said coil and said battery;
   e. circuit means coupled to said source of synchronizing waves for limiting the coil voltage with respect to said negative polarity voltage pulse during the coincidence of said synchronizing waves and said negative polarity voltage pulse comprising:
      1. a first transistor having its emitter coupled to said battery and its base coupled to said source of synchronizing waves whereby said coil, said battery and said first transistor present a low impedance to said negative polarity voltage pulse during the time interval of said synchronizing waves;
      2. a second transistor of the same generic type as said first transistor having its emitter coupled to the collector of said first transistor and its collector coupled to said coil whereby said coil, said battery and said first and second transistors form a closed series circuit;
      3. a third transistor of opposite generic type to said first and second transistors, said third transistor having its base coupled to the junction of said coil and said battery, its collector coupled to the base of said second transistor, and its emitter resistively coupled to the junction of said coil and said second transistor;

whereby the period of oscillation of such wheel is changed so as to substantially match the period of said source of precisely controlled frequency.

3,892,067

DAY-DATE WATCH CORRECTION MEANS

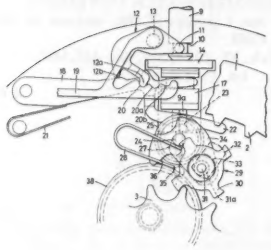
Marius Meylan-Piguet, L'Orient, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Aug. 5, 1974, Ser. No. 494,883

Claims priority, application Switzerland, Aug. 17, 1973, 11903/73

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 **6 Claims**



1. A calendar watch movement comprising two coaxial indicator members indicating the day and the date, respectively, a control stem capable of occupying several positions determined by axial displacement, a setting-lever cooperating with said control stem, a clutch-wheel mounted on a square of said stem, a yoke controlled by said setting-lever and controlling said clutch-wheel, and a setting-wheel which is engaged with said clutch-wheel in at least one of the positions of said stem, wherein said setting-wheel is integral with an arbor which projects from each of its faces, a correction lever pivots by friction fitting on said arbor and carries a correction wheel-and-pinion provided with a toothing engaged with said setting-wheel, said arbor is movable in translation, at least one of its ends being engaged in an elongated slot in a fixed frame element, and cooperates with said clutch-wheel in two positions of said stem, and said yoke has an auxiliary arm which extends at the level of one of the projecting portions of said arbor and displaces said arbor in said elongated slot when said stem is moved between one of said positions, being the correction position, and the other of said positions, being the setting position.

3,892,068

TIMEPIECE HAVING A MOTOR SPRING AND A BARREL

Raoul-Henri Erard, La Chaux-de-Fonds, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

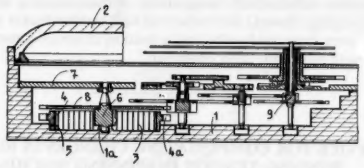
Filed May 8, 1974, Ser. No. 467,882

Claims priority, application Switzerland, May 10, 1973, 6784/73

Int. Cl. G04b *1/16*

U.S. Cl. 58—86 **8 Claims**

1. A timepiece comprising, a casing with a bearing surface element, a movement and frame therefor, a motor spring and a barrel surrounding the spring, the barrel being open on both ends, the barrel including a ring rotatably mounted on the



bearing surface such that the side of the barrel facing the bearing surface is closed thereby.

3,892,069

PROPULSION UNITS

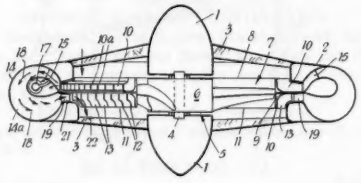
Robert Julian Hansford, Sherwood Cottage, Clifton Reynes, Olney, Buckinghamshire, England

Filed Oct. 30, 1972, Ser. No. 301,819

Claims priority, application United Kingdom, Nov. 5, 1971, 51607/71

Int. Cl. F02k *3/02;* **F02c** *3/08*

U.S. Cl. 60—226 **10 Claims**



1. A propulsion unit including rotor means incorporating a multi-bladed fan which over an outer peripheral region thereof defines centrifugal flow compressor passages and centripetal flow turbine passage and an annular combustor encircling the rotor means wherein the upstream ends of the compressor passages are located in a circular pattern around the rotor means, and immediately radially adjacent the ends of the fan blades so that the flow path of air entering the compressor passages and the flow paths of air passing between the blades of the fan are adjacent one another at the ends of the fan blades, the combustor having inlet means adapted to direct air from the compressor passages into the combustor and outlet means adapted to direct combustion gases from the combustor into the turbine passages to drive the rotor means.

3,892,070

AUTOMOBILE ANTI-AIR POLLUTION DEVICE

Ranendra K. Bose, 1554 N. Danville St., North Arlington, Va. 22201

Continuation-in-part of Ser. No. 35,658, May 8, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,884

Int. Cl.[2] F02M *25/06*

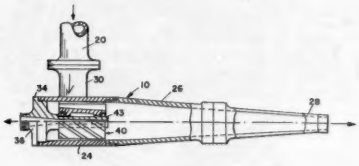
U.S. Cl. 60—279 **11 Claims**

1. In combination with an internal combustion engine, apparatus for separation of combustible and non-combustible gases in the exhaust gas mixture of the engine, comprising a turbine having a housing and inlet connection thereto from said engine to receive flow of exhaust gas mixture to drive said turbine and to be separated into generally combustible and non-combustible portions in said apparatus;

said turbine having a tapering hub with blades mounted thereon exposed to flow of said gas mixture to rotate said turbine wherein said gas mixture is moved in a helical

path having an axial component towards the smaller end of said tapering hub causing expansion of said gas mixture and increasing peripheral velocity;

a tapering vortex tube having a larger end and a smaller end, the larger end having means operatively connected with said turbine to receive the expanded gas mixture flow from said turbine and said vortex tube effecting an increase in peripheral speed towards the smaller end thereof thus centrifugally stratifying said gas mixture into a core of a substantially lighter and generally combustible



gas component and an outer layer of a substantially heavier and generally non-combustible gas component, wherein said core component flows in a reverse direction from said outer layer component for effecting separation; said outer layer component flowing towards the smaller end of said vortex tube for egress therefrom;

and passage means communicating with the larger end of said vortex tube and said engine for effecting egress of said core component to said engine;

including supplemental air supply means connected for mixing with said core component.

3,892,071

DEVICE FOR REGULATING THE RATE OF FLOW OF THE AIR BLOWN INTO THE EXHAUST DUCT OF AN INTERNAL COMBUSTION ENGINE

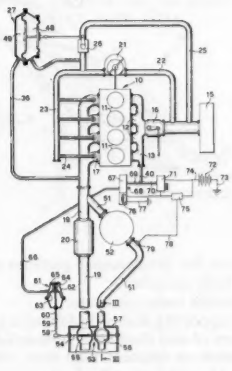
Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Feb. 5, 1973, Ser. No. 329,823

Claims priority, application Italy, Feb. 8, 1972, 20343/72

Int. Cl. F02b *75/10*

U.S. Cl. 60—288 **5 Claims**



1. An internal combustion engine comprising an intake piping, an exhaust piping, a pump driven by the engine for drawing air from the atmosphere and discharging through a delivery duct the compressed air into said exhaust piping, means for varying the rate of delivery though said delivery duct, the improvement including first means sensitive to the differential between the pressure in the delivery duct of the pump and the pressure in the exhaust piping, said first means being connected to said means for varying the rate of delivery in the sense of diminishing said rate of flow as the differential is increased, second means sensitive to the differential between one at least of said pressures in the exhaust piping and in the delivery duct and the outside atmosphere pressure; said second means being connected to said means for varying the rate of delivery of the pump in the sense of diminishing the rate of delivery of the pump as the differential is increased, said first and second sensitive means being formed by a casing having a surface consisting of a first deformable diaphragm and partitioned in two half spaces by a second deformable diaphragm which is substantially parallel to said first diaphragm, the half space comprised between the two diaphragms being connected to the delivery duct of the pump, the other half space being connected to the initial portion of the exhaust piping, the diaphragms being mechanically interlinked and connected with said means for varying the rate of flow delivered through the delivery duct.

3,892,072

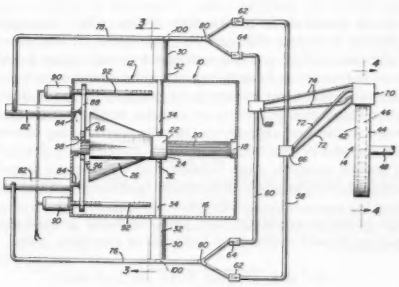
VARIABLE SPEED HYDRAULIC TRANSMISSION

Benjamin F. Harvey, F-61 Country Corners, Athens, Ga. 30601

Filed May 10, 1973, Ser. No. 358,937

Int. Cl. F16h *39/46*

U.S. Cl. 60—487 **4 Claims**



1. In combination, a rotary input shaft, a cam body mounted on said shaft for rotation therewith and adjustable shifting therealong, said cam body including radially outwardly projecting and axially tapering cam means, liquid pump means including reciprocal piston means and back and forth shiftable actuator means having a follower portion engaged with said cam body, said pump means including liquid inlet and outlet means, a liquid motor including a liquid inlet and a liquid outlet, liquid conveying means communicating said liquid inlet and said liquid outlet with said liquid inlet and outlet means, closed variable volume liquid reservoir means communicated with said liquid conveying means and including shiftable operator means operative to vary the effective volume of said reservoir means, and motion transmitting means operatively connecting said shiftable operator means and said cam body for shifting the former in response to shifting of the latter to increase and decrease the effective volume of said liquid reservoir means for receiving and expelling liquid displaced from said outlet means and to be drawn into said inlet means, respectively, as a result of reciprocal shifting of said piston means upon back and forth shifting of said actuator means.

3,892,073
PYROTECHNIC POSITIONING DEVICE

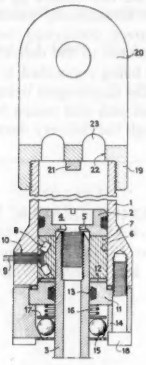
Bernard E. Plantif, and André H. Hiss, both of St. Medard En Jalles, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed May 24, 1973, Ser. No. 363,490

Claims priority, application France, June 16, 1972, 72.21927

Int. Cl. F01b *29/8;* **F02m** *13/00*

U.S. Cl. 60—635 **7 Claims**



1. A pyrotechnic positioning device which comprises a cylinder, a piston disposed for movement in one direction within said cylinder, a rod connected to said piston for movement therewith and extending beyond said cylinder to impart such movement to a means to be positioned by the device, a pyrotechnic charge having an annular configuration and disposed within said cylinder in laterally surrounding relation to said rod and behind said piston, said charge being detonatable by means operable from outside said cylinder to propel the piston and rod in said one direction, and unidirectional acting blocking means disposed to allow movement of the rod in said one direction and block movement thereof in the opposite direction.

3,892,074
ROTARY ENGINE OPERATING ON REFRIGERATION CYCLE

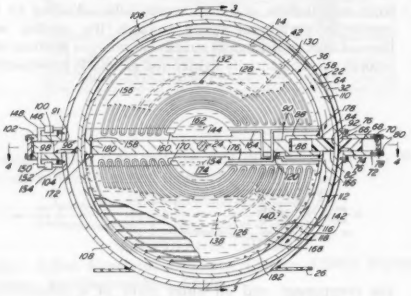
Frederick W. Yoos, Jr., 5008 F St., Philadelphia, Pa. 19124

Filed Feb. 4, 1974, Ser. No. 439,509

Int. Cl. F01k *11/04*

U.S. Cl. 60—669 **17 Claims**

1. A pollution-free engine comprising a first chamber which expands in response to the evaporation of a first voltile refrigerant gas, shaft means connected to said first chamber to provide mechanical power when said first chamber expands, said first gas being provided to the first chamber from an evaporation chamber wherein a first volatile liquid is boiled off to form said first gas, a second chamber which contracts as said first chamber expands, said second chamber serving to recycle gas used in the first chamber by providing such gas to a condensation chamber, said condensation chamber acting to condense said first gas to said first liquid and means for providing the condensed first liquid to the evaporation chamber, said evaporation chamber comprising a first exchanger connected through passageway means to a third chamber, said third chamber containing a second volatile fluid in the form of a gas and contracting as the first chamber expands, whereupon said second fluid condenses to form a second liquid in the first heat exchanger to thereby provide heat to the first liquid within the evaporation chamber to cause said first liquid to evaporate, said condensation chamber comprising a second heat exchanger connected to the first heat exchanger by a passageway to receive condensed liquid therefrom, said second heat exchanger also being connected through passageway



means to a fourth chamber which expands as the third chamber contracts, whereupon the condensed second liquid evaporates in the second heat exchanger, to thereby extract heat from the first gas within the condensation chamber to cause said first gas to condense into said first liquid.

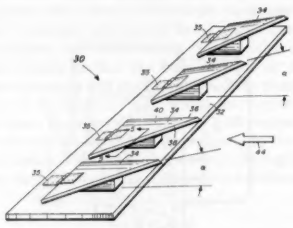
3,892,075
APPARATUS FOR VORTEX GENERATION TO PRECIPITATE SUSPENDED PARTICLES IN FLUID BODIES

Michael Edward Tibbett, 1035 - 33rd St., Vero Beach, Fla. 32960

Filed Oct. 29, 1973, Ser. No. 410,788

Int. Cl. E02b *3/04*

U.S. Cl. 61—4 **6 Claims**



1. Apparatus for precipitating particles suspended in a moving fluid body comprising:

a delta hydrofoil vortex generator;

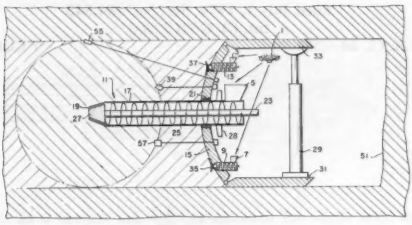
means for supporting said hydrofoil vortex generator from the bottom of said fluid body substantially transverse to the direction of adjacent fluid flow, whereby particles suspended in said moving fluid are precipitated therefrom and deposited on the bottom thereof behind said hydrofoil by vortex generation across said hydrofoil; and wherein

said supporting means includes means rendering said delta hydrofoil vortex generator movable responsive to said fluid flow thereby said vortex generator changes its attack angle responsive to said fluid flow to attain a maximum lift-to-drag ratio.

3,892,076
LONG SHIELD MINING METHOD

Martin S. Oudenhoven, Lakewood, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 1, 1974, Ser. No. 456,509
Int. Cl.[2] E21C *41/00;* **E02D** *3/12*
U.S. Cl. 61—35 **7 Claims**

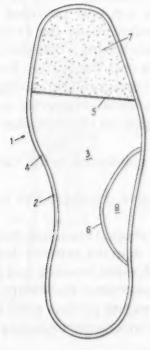


1. A long shield mining method for filling in previously mined out areas comprising the steps of: conveying processed mined waste material to the mining area where a long shield is placed near a mine wall; forcing the material through the shield under pressure behind said shield to form a spent material wall until a predetermined high pressure is reached and an overburden supporting high pressure zone formed; detecting the amount of predetermined high pressure developed and the appropriate location of said zone; forcing additional waste material through said shield at a lower pressure after said predetermined high pressure is detected to enable disengagement of the shield from the spent material wall; and repeating the forcing step to develop a high pressure zone and the forcing disengagement step so as to create a different high pressure zone that overlaps with said first zone.

3,892,077
INSOLE

James Graham Wolstenholme, 2 Vicarage Ln.; George Watts, 26 Paddock Ln., both of Mears Ashby, Northamptonshire, and Philip Robert Hunter, 3 Shepherds Fold, Holmer Green, Buckinghamshire, all of England

Filed Apr. 19, 1974, Ser. No. 462,548
Int. Cl. A43b *13/38*
U.S. Cl. 36—44 **10 Claims**



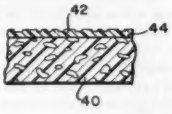
1. An insole defined by an envelope having at least one flexible side generally shaped like at least a portion of a foot and welded about the perimeter;

a first zone in said envelope defining a single cavity bounded at the front by a transverse line forward of the metatarsal heads of the toes of the foot, by arcuate perimeter portions concave in plan view on either side of the foot in the vicinity of the instep of the foot and a substantially semicircular end perimeter portion in the vicinity of the heel, and said first zone containing a liquid sealed inside; and a second zone in said insole defining an empty zone bounded by a portion of the perimeter of said insole at an area of arch support and by a weld inwardly of said portion also in said area of arch support.

3,892,078
TEXTURED SHOE STIFFENER BLANK

Addison W. Closson, Jr., c/o Proctor Laminar Division 32 Calvin Rd., Watertown, Mass. 02172

Filed Aug. 17, 1972, Ser. No. 281,291
Int. Cl. A43b *13/42;* **B32b** *3/26*
U.S. Cl. 36—68 **21 Claims**



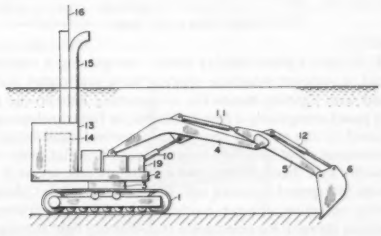
1. A flexible laminate sheet structure suitable for use in forming a shoe counter stiffener and having a (a) relatively thick substrate formed of a closed-cell foam of a thermoplastic elastomer of from 30 to 70 mils in thickness and comprising 20 to 70% of void volume and (b), adherently and directly bonded to said substrate, a relatively thin textured coating of a single crosslinked and thermoset resin coating composition having a Shore A durometer value of from 20 to 70, said coating being coextensive with said laminate sheet wherein the maximum thickness of said textured coating is from 0.5 to 6 mils, wherein the coating comprises a ratio in thickness between high spots and low spots of at least 1.5 to 1.0.

6. A molded shoe counter stiffener formed of the laminate defined in claim **1.**

3,892,079
CONTROL SYSTEM FOR AMPHIBIOUS HYDRAULIC EXCAVATOR

Kinichi Hirano, Tsuchiura, and Yoshiaki Metsugi, Tokyo, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Japan

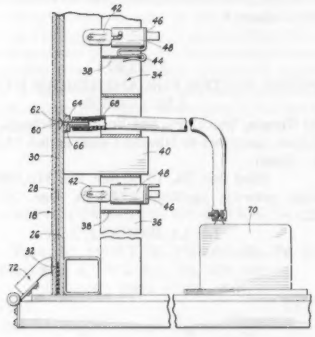
Filed Dec. 26, 1972, Ser. No. 318,700
Claims priority, application Japan, Dec. 27, 1971, 46-105322
Int. Cl. E02f *3/32, 5/28*
U.S. Cl. 37—56 **1 Claim**



1. An amphibious hydraulic excavator comprising: an amphibious crawling truck; hydraulic motors for driving said crawling truck; a revolving platform mounted rotatably on said truck; a further hydraulic motor for rotating said revolving platform; a shovel assembly mounted on said revolving platform and composed of a boom, an arm and a bucket which

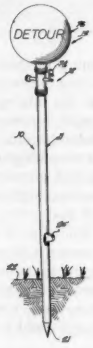
are actuated by respective hydraulic cylinders; an engine room mounted on said revolving platform; a prime mover installed in said engine room; hydraulic pumps driven by said prime mover for delivering pressure fluid; pilot operated directional control valves for controlling the flows of pressure fluid to and from said hydraulic motors and said hydraulic cylinders, respectively; a snorkle means extending upwardly from the engine room for serving as an air suction and exhaust conduit for said prime movers; means for actuating said directional control valves, said actuating means being activated by radio signals and including a radio receiver for receiving triggering signals; a source of pilot pressure fluid; fluid lines connecting said source of pilot pressure fluid with the respective directional control valve; solenoid valves provided on the respective fluid line for actuation in response to the triggering signals received by said receiver so as to control the flows of pilot pressure fluid to said directional control valves, respectively; shuttle valves positioned on the respective fluid lines downstream of said solenoid valves; by-pass fluid lines connecting between said source of pilot pressure fluid and the respective shuttle valves; and manual control valve means provided on the respective by-pass fluid lines for controlling the flows of pilot pressure fluid to said directional control valves, said manual control valve means being provided for adjusting the flow rate of pilot pressure fluid to said respective directional control valve; and wherein every part of said excavator is fabricated water-tight whereby said hydraulic excavator can be operated either in a remote radio-controlled manner or by normal manual operation.

3,892,080
BACK LIGHTED PANEL
John K. Koch, P.O. Box 7575, Tulsa, Okla. 74105
Filed Dec. 18, 1972, Ser. No. 315,797
Int. Cl. G09f *13/10*
U.S. Cl. 40—106.1 **1 Claim**



1. A back lighted display device comprising a translucent panel, a support structure spaced from said panel and provided with lighting means for transmitting light to the panel, said panel comprising a first substantially flat translucent plate secured to the support structure, a second substantially flat translucent plate disposed adjacent said first flat plate on the opposite side thereof from said lighting means, art work sheet means interposed between said first and second flat plates and having selective opaque portions and selective transparent portions thereon for selectively transmitting light through said second flat plate for providing a lighted pattern, suction means communicating with the space between said flat plates for releasably securing said second flat plate to said first flat plate, said art work sheet means being responsive to said suction means for releasably adhering to one of said flat plates, said panel including sealing means extending around the outer periphery thereof between said two plates, said suction means comprising aperture means provided in said first flat plate, pump means, and conduit means connected between the pump means and the aperture means for transmitting suction thereto upon actuation of the pump means.

3,892,081
INFLATABLE PORTABLE SIGN
Alvin G. Goral, 2362 Deckner Ave., Green Bay, Wis. 43202
Filed July 1, 1974, Ser. No. 484,543
Int. Cl. G09f *21/06*
U.S. Cl. 40—214 **7 Claims**

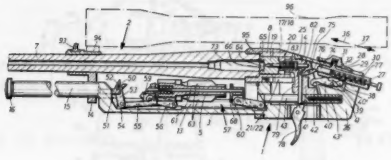


1. An inflatable portable sign comprising:
an elongated tubular rigid support post having a bottom end and a top end, the bottom end adapted to be embedded into the ground, roadway or the like to support the post therein, and the top end provided with screw threads extending circumferentially the exterior portion thereof;
a valve mechanism having a cylindrical housing with a top end and a bottom end, the bottom end being of a cylindrical closed top configuration having threads extending circumferentially about its interior surfaces adapted to be threadedly engaged on the threaded top end of the support post;
an air intake valve connected to the valve mechanism housing;
an air discharge valve connected to the valve mechanism housing;
a cylindrical collar shaped clamping band having an interior diameter greater than the exterior diameter of the top end of the valve mechanism housing and adapted to be placed thereover and concentric therewith;
a balloon having a mouth portion to be engaged over the top end of the valve mechanism housing beneath the clamping band;
means for adjusting the clamping band to detachably secure the mouth of the balloon to the valve mechanism housing;
a source of air for connection to the air intake valve for inflating the balloon; and
message conveying indicia imprinted on the balloon and clearly visible upon inflation of the balloon.

3,892,082
BREECH AND LOCK MECHANISM FOR SINGLE-SHOT OR MULTIPLE SHOT REPEATING HUNTING RIFLES

Gerold Domhan, Volkerstrasse 28, 7000 Stuttgart 1, Germany

Filed Dec. 19, 1973, Ser. No. 426,344
Claims priority, application Germany, Dec. 23, 1972, 2263378
Int. Cl.[2] F41C *13/00*; F41D *3/00*
U.S. Cl. 42—11 21 Claims

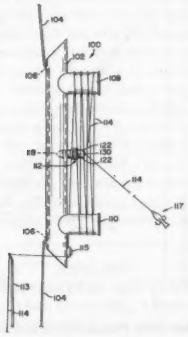


1. In a breech and lock mechanism for single shot and multiple shot repeating rifles particularly used in hunting, the combination of a first unit comprising a frame and a second unit comprising a barrel having a breech on the end thereof, mutually slideably engageable longitudinal guide means on said first and second units below and parallel to said barrel for slideably guiding said first and second units within limited longitudinal movement with respect to each other between closed and open positions thereof, a bolt head having a rear portion on said frame, a pair of cylinders pivotably mounted in said breech and pivotable between positions corresponding to the open and closed positions of said first and second units, means on said cylinders lockingly engageable with said bolt head rear portion in the closed position of said units and released therefrom when the units are sliding toward the open position thereof, a laterally extending side bar on each of said cylinders, and a cross bar on said frame enclosing said cylinder bars in the closed portion of said units to prevent pivoting of said cylinders during firing of the rifle.

3,892,083
RELEASE MECHANISM

Carmen A. Peterson, 38 Pilot Pl., New Port Richey, Fla. 32355

Filed Jan. 11, 1974, Ser. No. 432,579
Int. Cl. A01k *91/00*
U.S. Cl. 43—43.11 5 Claims

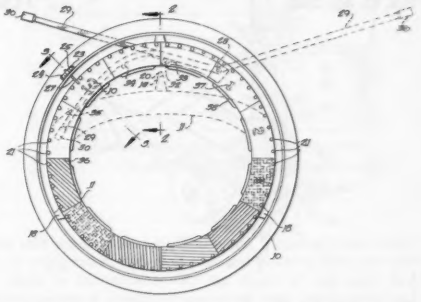


1. A line release means used in combination with outrigger means, said release means fixedly attached to said outrigger means intermediate its ends; said outrigger means comprising substantially elongated, substantially hollow tubular base means including a plurality of substantially hollow tubular finger means rigidly affixed to and outwardly extending from said elongated base means and oriented substantially perpendicular to the longitudinal axis thereof; said base means further comprising a plurality of aperture means arranged in spaced relation and substantially aligned whereby a support element is connected between said apertures in supporting relation to said base means.

3,892,084
PLAY HOOP

Stefan Hanysz, Chicago, Ill., assignor to Stefan Hanysz, Chicago, Ill.

Filed Nov. 8, 1973, Ser. No. 413,899
Int. Cl. A63h *5/00*
U.S. Cl. 46—114 9 Claims

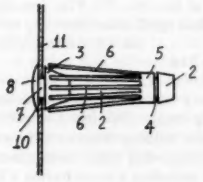


1. A play hoop comprising a pair of annular members in a mutually concentric relation, and providing a central opening of a size to accomodate the body of a person playing therewith, said annular members being capable of rotary spinning motion one independently of the other, means for guiding the rotary spinning motion of one of said annular members with relation to the other of said annular members, a plurality of spaced pegs extending throughout the entire circumference of one of said annular members and extending in a lateral direction from said annular member, and a prong mounted upon the other of said annular members, said prong being in a radial relation with both of said annular members and having its free end extending within the plane defined by said pegs whereby a rattling sound may be produced when said free end of said prong rides upon said pegs when one of said annular members is caused to rotatably spin with relation to the other of said annular members.

3,892,085
VOICE FOR DOLLS OR PUPPETS, PROVIDED WITH AN ANCHORING ORGAN

Arnaldo Palumbo, Via Faenza 10, Milan, Italy

Filed Mar. 13, 1973, Ser. No. 340,935
Claims priority, application Italy, Nov. 7, 1972, 031368/72
Int. Cl. A63h *5/00*
U.S. Cl. 46—180 5 Claims



1. A voice device for a toy, comprising, in combination, a tubular member having a first end portion of frusto-conical configuration and a second end portion longitudinally spaced from said first end portion and provided with a recess; a

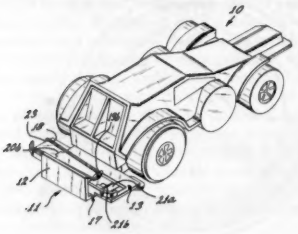
sound-generating reed inserted into said tubular member; and an anchoring element having a collar accommodated in said recess of second end portion and a plurality of flexible rod-like members attached to said collar and extending therefrom toward said first end portion.

3,892,086

FLIPPER MECHANISM FOR TOY VEHICLES

Derek J. Gay, Palos Verdes Peninsula, and William H. Smedley, Los Angeles, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Aug. 9, 1973, Ser. No. 387,092
Int. Cl. A63h *11/10*
U.S. Cl. 46—202 **3 Claims**



1. A flipper mechanism for a toy vehicle comprising:

a target area;

actuating means for flipping a toy vehicle upon impact of said target area by an external source, said actuating means including a stationary member, a movable member, and a spring means, said movable member including said target area and being rotatably mounted to said stationary member, said stationary member having an L-shaped tab and said movable member having an underside surface in the flipper mechanism's unactuated state, the L-shaped tab receiving the underside surface of said movable member, said spring means connecting said stationary member to said movable member and upon impact of said target area by an external source, said underside surface is urged away from said L-shaped tab under the force of said spring means to allow the movable member to rotate away from said stationary member; and means for removably mounting the flipper mechanism to one of the ends of said toy vehicle.

3,892,087

DOLL CARRYING A MARKING MEANS, WITH PAINT RECEPTACLE AND ACCESSORY HAVING MOVABLE MARKING SURFACE

Jeffrey D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

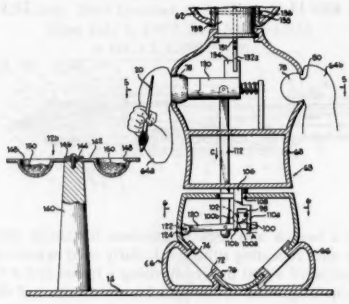
Division of Ser. No. 326,874, Jan. 26, 1973, Pat. No. 3,834,070. This application June 26, 1974, Ser. No. 483,366
Int. Cl. A63h *13/04*
U.S. Cl. 46—116 **6 Claims**

1. In combination, a doll and accessory set, comprising:

an accessory comprising means defining a marking area including means defining a movably mounted marking surface for holding material to be marked;

means defining a doll body positionable adjacent said marking area including a torso having a head mounted on the top thereof and arms connected to said torso with a hand at the end of at least one of the arms, said one arm being mounted for movement relative to said torso, said doll and accessory including selectively actuatable drive means for moving said arm between a first position wherein said hand is generally over said marking surface and a second position away from said marking surface defining a substantially constant path of travel therebetween;

a paint brush mounted on the hand of the movable arm for movement therewith so that said paint brush will contact material on said marking surface when said arm is in said first position;



said drive means being operably connected to said movable arm and said marking surface for moving said arm between said positions while, at the same time, moving said marking surface relative to said paint brush when said movable arm is in said first position; and

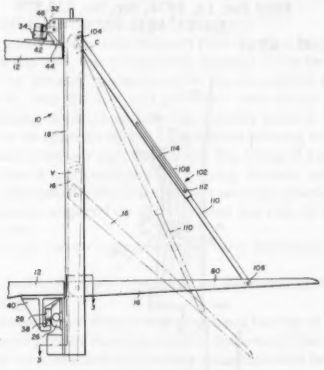
means defining a receptacle for paint positioned adjacent said doll, the paint brush receiving paint from said receptacle when said movable arm is in the second position.

3,892,088

DOOR MOUNTING FOR CARGO HANDLING MECHANISM

Warren O. Fleenor, 8250 W. Bergen Rd., Leroy, N.Y. 14482

Filed May 3, 1973, Ser. No. 356,767
Int. Cl. B60p *1/00*
U.S. Cl. 49—37 **13 Claims**



1. In a cargo handling mechanism, the combination comprising:

support frame means defining an opening;

a door movable between open and closed positions for opening and closing said opening, and having a front end and a rear end;

means for movably mounting said rear end of said door to said support frame means adjacent one end of said opening;

said door mounting means comprising a guideway in said support frame means, a gear rack in said guideway, a spindle on said rear end of said door, a pinion gear on said spindle, and a shoe pivotally mounted on said spindle and slidably mounted in said guideway for holding said pinion gear into meshing engagement with said gear rack; and

means for driving said spindle and said pinion gear for reciprocally moving said rear end of said door relative to said support frame means for moving said door between said open and closed positions.

3,892,089

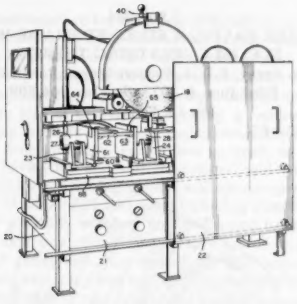
WELD COUPON SAMPLE CUTTER

Robert N. Coulstring, Hanover, Mass., assignor to Triangle Engineering, Inc., West Hanover, Mass.

Filed July 2, 1974, Ser. No. 485,221

Int. Cl. B24b *27/06*

U.S. Cl. 51—34 D **10 Claims**



1. A weld coupon sample cutter comprising a frame, a horizontal table support mounted for limited translation back and forth in one horizontal direction on said frame, controllable actuator means operable for positioning said table support, a pair of spaced pedestals mounted on said table support and aligned in the horizontal direction normal to the direction of motion of said table support, a pair of opposed clamp plates respectively mounted on said pedestals, at least one of said clamp plates being mounted for axial motion toward and away from the other said clamp plate, second controllable actuator means operable for axially positioning the movable said clamp plate, horizontal guide rails mounted on said frame above said pedestals and parallel with the axis of alignment of said pedestals, a carriage mounted for horizontal translation on said guide rails normal to the direction of motion of said support table, an abrasive cutting wheel and power drive means for driving said wheel mounted on said carriage, said wheel rotating in a vertical plane parallel to the axis of alignment of said pedestals, means for adjusting the vertical position of said cutting wheel on said carriage for controlling depth of cut relative to said pedestals, and means operable for advancing and retracting said carriage along said rails to make a cut through a weld coupon clamped between said clamp plates.

3,892,090

WORK SHAPING APPARATUS

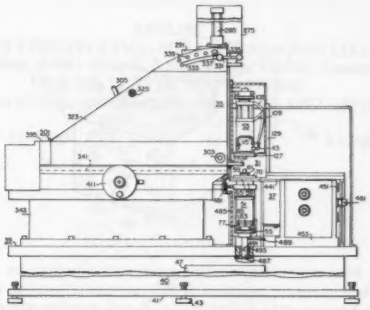
Harry J. Armitage, 1546 Cavitt Rd., Monroeville, Pa. 15146

Filed Oct. 24, 1973, Ser. No. 409,314

Int. Cl. B24b *9/14*

U.S. Cl. 51—101 R **11 Claims**

1. Apparatus for shaping work including a cam for determining the final shape of said work, flexible pivot means including at least one member having a resilient web from which arms extend oppositely, said web being flexible to permit one of said arms to pivot relative to the other, said flexible pivot means defining a first axis of said web about which said one arm is pivotal relative to said other, a rocker support connected to said one arm pivotal back and forth with said one arm about said axis as a center, clamping means for said work rotatable about a second axis and connected to said support pivotal therewith, means mounting said cam rotatable



about said second axis with said work, a cam follower rotatable in engagement with said cam and pivoting said cam and said work in accordance with the shape of said cam, and grinding means in grinding engagement with said work as said work is pivoted and rotated to shape said work.

3,892,091

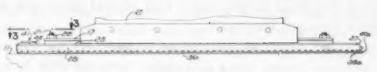
ABRADING TOOL UTILIZING A SELF ADHESIVE ABRADING SHEET

Alma A. Hutchins, 49 N. Lotus Ave., Pasadena, Calif. 91107

Filed Oct. 17, 1974, Ser. No. 515,657

Int. Cl. B24b *23/00*

U.S. Cl. 51—170 TL **18 Claims**



14. The combination comprising:

a shoe including a backing plate which is to extend essentially horizontally when abrading an upwardly facing work surface, and a cushion carried at the underside of said backing plate and having an undersurface to which a layer of adhesive on a self adhesive abrading sheet can detachably adhere;

said undersurface of the cushion being formed of a substance to which said adhesive will adhere tightly in use but from which the adhesive can be stripped with said sheet for replacement;

said cushion having a forward end face past which said abrasive sheet can extend upwardly at said forward end of the shoe and to which said adhesive of the abrasive sheet can adhere; and

means carried at the upper side of said backing plate near the forward end thereof and defining a locating recess into which a forward end portion of the abrasive sheet can project generally rearwardly without being clamped therein;

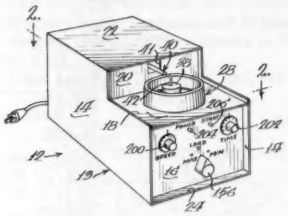
said recess having upper and lower walls between which said end portion of the sheet can be received and which are fixed relative to one another at a predetermined spacing which remains the same during an abrading operation as during insertion of said end portion of the sheet into said recess and removal therefrom.

3,892,092

AUTOMATIC POLISHING APPARATUS

Marvin W. Keith, Jr., Evanston, Ill., assignor to Buehler Ltd., Evanston, Ill.

Filed May 17, 1974, Ser. No. 471,022
Int. Cl. B24b 7/04
U.S. Cl. 51—154 15 Claims



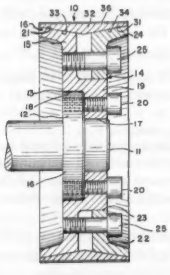
1. In an automatic polishing apparatus of the type for polishing specimens for purposes of microstructural analysis including a housing and a generally cup-shaped member mounted on the housing and having a flat base or polishing surface on which abrasive slurry or the like is dispersed and over which a specimen is moved during a polishing operation, the improvement comprising, in combination, a specimen drive arm supported on said housing for composite axial and pivotal movement and having an outer end engageable with a specimen for moving the same over said polishing surface, first drive means mounted in said housing for rotation about a fixed axis, a drive motor connected to said first drive means for rotating the same, second drive means rotatably mounted eccentrically on said first drive means, means interconnecting said first and second drive means causing said first drive means to rotate said second drive means relative to said first drive means, means connecting an inner end of said specimen drive arm to an eccentric portion of said second drive means, and guide means associated with said drive arm intermediate the ends thereof whereby a composite motion is imparted to said inner end of said drive arm and a related composite motion is imparted to said outer end of said drive arm and a specimen engaged therewith.

3,892,093

TREAD GRINDING WHEEL

Gustav M. Waller, Geneva, and Kenneth L. Landmark, St. Charles, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed July 22, 1974, Ser. No. 490,684
Int. Cl. B24d 9/02
U.S. Cl. 51—372 7 Claims



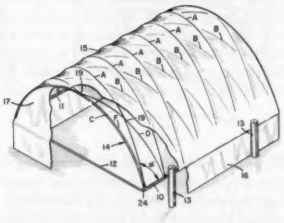
1. A grinding wheel assembly for a tire tread grinding apparatus having a drive shaft, said grinding wheel assembly comprising a first hub section, first fastening means for directly fastening said first hub section to the drive shaft for rotation therewith, a second hub section, second fastening means for fastening said second hub section only to said first hub section, each of said fastening means being exposed and accessible for independent disassembly, complementary aligning and orientating means for axially aligning and angularly orienting said first and second hub sections thereby to maintain said hub sections in the same alignment and orientation upon reassembly of said hub sections after said hub sections are disassembled, said hub sections each having oppositely directed peripheral flanges having tapered wedging surfaces, said tapered wedging surfaces being formed to provide a circumference in true round about the axis of rotation of the drive shaft, and an expansible collet mounted on said wedging surface and an abrading band of fixed diameter frictionally retained on said collet when said fastening means are drawn tight to fasten said first hub section and said second hub sections thereby to wedgingly expand said collet.

3,892,094

SHELTER HAVING A STRESSED FRAME WITH A FLEXIBLE SHEATHING THEREON

William N. Spray, R.D. 1, Fredericktown, Pa. 15333

Filed June 4, 1973, Ser. No. 366,509
Int. Cl. E04b 1/347
U.S. Cl. 52—63 18 Claims

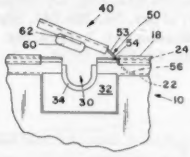


1. A generally semi-cylindrically shaped skeleton-frame for a shelter comprising a pair of laterally spaced side rails, means for maintaining the side rails in substantially equally spaced relationship throughout their length, a first series of longitudinally substantially equally spaced substantially parallel spring steel rods attached at one end to one side rail and at the other end to the other side rail, the point of attachment of one end of a rod to a side rail being spaced longitudinally from the point of attachment of the other end of the rod to the other side rail, a second series of longitudinally substantially equally spaced substantially parallel spring steel rods attached at one end to one side rail and at the other end to the other side rail, the point of attachment of one end of a rod to a side rail being spaced longitudinally from the point of attachment of the other end of the rod to the other side rail a distance which is substantially equal to the spacing between the opposite ends of the rods of the first series but in a direction opposite to the direction of spacing between the ends of the rods of the first series whereby a rod of one series crosses at least two rods of the other series, the spacing between rods of the second series being substantially1 equal to the spacing between the rods of the first series, the length of all of said rods being substantially equal and greater than the spacing between the side rails whereby the said rods are substantially arcuate shaped and under tension and support all of any load on the frame above the side rails and transfer the load to the side rails, and means for securing rods together adjacent to a cross-over point whereby the segments of each rod between cross-over points is deflected from its normal path and is under compression and tension.

3,892,095
WIRING ACCESS COVER

Dirk J. Vankuik, Jenison, and Glae F. Wilcox, Wayland, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Continuation of Ser. No. 371,305, June 18, 1974, abandoned. This application Sept. 23, 1974, Ser. No. 508,543
Int. Cl. E04f *19/08, 17/08*
U.S. Cl. 52—221 **12 Claims**

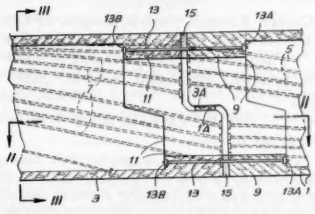


2. In a panel structure for an article of furniture or the like, said panel including an open interior, an access opening into said interior and a closure for said opening, said opening including a peripheral edge, the improvement comprising: said closure including a cover portion having a configuration corresponding to that of said access opening; a resilient spring arm extending laterally outwardly and downwardly at an inclined angle from said cover portion and generally to one side thereof and having top and bottom surfaces, said spring arm being adapted for positioning through said access opening into said interior of said panel; said panel including a cavity within said interior generally adjacent and positioned laterally and generally to one side of said peripheral edge of said access opening, said cavity including spaced top and bottom walls said spring arm extending into said cavity between said spaced top and bottom walls of said cavity, said top wall engaging said top surface of said spring arm and said bottom wall engaging said bottom surface of said spring arm at spaced points along the length of said spring arm whereby said spring arm tends to force said cover downwardly into position on said access opening as a result of its spaced engagement with said top wall and said bottom wall of said cavity.

3,892,096
BEAM STRUCTURES

Romualdo Macchi, Via S. Paolo 31, Pisa, Italy (56100)

Division of Ser. No. 276,022, July 28, 1972, Pat. No. 3,788,023. This application Jan. 10, 1974, Ser. No. 432,207
Claims priority, application Italy, Aug. 2, 1971, 9633/71
Int. Cl. E04c *3/26*
U.S. Cl. 52—227 **6 Claims**

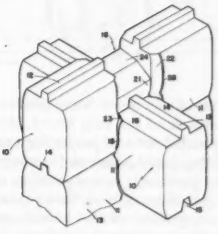


1. A beam structure, comprising
two beams
means supporting the two beams in end to end relationship, each beam having elongate reinforcing members extending under tension between opposite end portions,
reinforcing means coupling the adjacent end portions of the two beams under tension, the reinforcing members and reinforcing means in each said adjacent end portion overlapping one another, and
means anchoring the reinforcing members and reinforcing means at axially spaced locations in the end portion to place under compression that portion of the beam lying between the anchorings.

3,892,097
JOINT CONSTRUCTION FOR LOGS AND THE LIKE

David Bain, 2404 - 48th St. S.E., Calgary, Alberta, Canada

Filed July 16, 1973, Ser. No. 379,580
Claims priority, application Canada, Aug. 25, 1972, 150230
Int. Cl. E04b *1/10*
U.S. Cl. 52—233 **8 Claims**



1. An elongated construction member having a substantially rectangular cross section, said member having a member intersecting portion of reduced cross section formed thereon, said portion having a width less than the width of said member, said width being defined between side edges, and a depth less than the depth of said member, said portion having an angled upper surface which, when viewed in transverse cross section, slopes downwardly from one side edge of said portion to the other side edge thereof and angled lower surface situated at right angles to said upper surface, said portion being bordered by upper and lower pairs of vertical end walls, the junction between said end walls and vertical side faces of said member being beveled, the upper and lower longitudinal corners of said member being arcuately curved thereby increasing the area of contact when two members are in intersecting relationship one with the other, said beveled junction between said end walls and said vertical side faces following the arcuate curvature of said corners of said members.

3,892,098
PROCESS AND A DEVICE FOR BUTT JOINTING AND ASSEMBLING PANELS OF A BUILDING

Rinei Kobori, 13-2 Takakura-cho, Nishinomiya, Japan

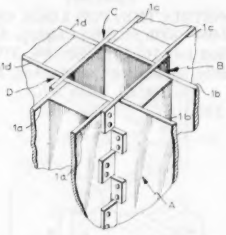
Continuation-in-part of Ser. No. 159,832, July 6, 1971, abandoned. This application Sept. 11, 1973, Ser. No. 396,309
Claims priority, application Japan, July 24, 1970, 45-65289
Int. Cl. E04b *1/56, 2/32*
U.S. Cl. 52—270 **7 Claims**

5. A butt jointing assembly for joining a plurality of building panels at right angles to each other in the construction of a building, said assembly comprising:
four joining boards, each of said boards having a length equal to the length of the side edge of a panel to be joined, each of said boards having two parallel rows of alternating sunken and raised portions, one row on each side thereof, said portions having the same pitch, the distance between the sunken portion in one row and the corresponding sunken portion in the other parallel row being equal to the thickness of panels to be joined, and the height of each raised portion being substantially greater than the thickness of said boards;

two of said joining boards having the same shape and being positioned face to face in parallel to each other;

the remaining two joining boards being positioned face to face and at right angles to said first two boards;

said remaining two boards having their sunken and raised portions arranged so that said portions intersect at right angles with the first two boards;



the raised portions of one board being positioned in adjoining sunken portions of the next board, thereby forming four pairs of parallel rows of projecting raised portions;

at least one building panel positioned between each of said pairs of rows of projecting raised portions with the entire length of the side edge of each thus positioned panel in contact with a respective of said boards; and

said projecting raised portions being firmly secured to the faces of each said thus positioned respective building panel.

3,892,099

MEANS FOR FASTENING OF SANDWICH PANELS TO SUPPORTS

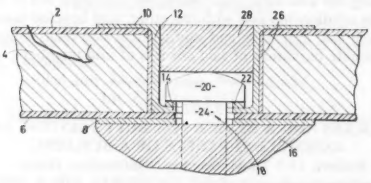
Gordon Peter Worgan, Yate, and Gordon John Lane, Henleaze, both of England, assignors to Rolls-Royce (Composite Materials), Bristol, England

Continuation of Ser. No. 161,537, July 12, 1971, abandoned. This application Sept. 7, 1973, Ser. No. 395,064

Claims priority, application United Kingdom, July 16, 1970, 34588/70

Int. Cl. E04c *2/34*

U.S. Cl. 52—479 **11 Claims**



1. A panel removably secured to a support by a fastener means; the panel comprising a first and a second skin of a material reinforced by fibers, on either side of a cellular core, with a hole through the first skin and the core and a smaller concentric hole through the second skin, reinforced by a flat annulus adhesively bonded to the outer face of the second skin around the smaller hole, and by an insert comprising a hollow tubular portion extending axially into and lining the hole in the core, an external flange at one end of the tubular portion and adhesively bonded to the outer face of the first skin, and a radially inwardly extending internal flange at the other end of the tubular portion and adhesively bonded to the inner face of the second skin around the smaller hole; the annulus engaging the support; and the fastener means including a shank passing through the holes in the internal flange, the second skin, and the annulus into the support, and a head portion having a clamping face within said hollow tubular portion exerting a clamping force on the internal flange, second skin, and annular against the support, the said head portion having radial clearance within the tubular portion.

3,892,100

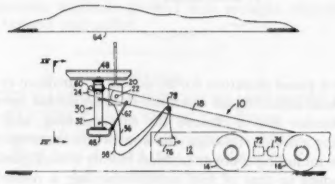
METHOD AND APPARATUS FOR MINING AND SUPPORTING THE MINE ROOF

Will B. Jamison, Bethel Park, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Division of Ser. No. 391,032, Aug. 23, 1973, which is a continuation-in-part of Ser. No. 286,744, Sept. 6, 1972, abandoned. This application Oct. 7, 1974, Ser. No. 512,674

Int. Cl. E21d *15/59*

U.S. Cl. 61—45 R **6 Claims**



1. A method for inserting permanent roof supports in a mine roof at a preselected location while providing temporary roof support adjacent the preselected location comprising,

carrying a temporary roof support to a preselected location on a portion of a self-propelled vehicle, said self-propelled vehicle having apparatus thereon for inserting permanent roof supports in a mine roof,

maneuvering said self-propelled vehicle to position said temporary roof support adjacent said preselected location,

providing power from a power operated means on said self-propelled vehicle to extend said temporary roof support into abutting relation with said mine roof and the mine floor to provide support for said mine roof at said location,

disengaging said portion of said self-propelled vehicle from said temporary roof support, and

maneuvering said self-propelled vehicle adjacent to said portable roof support to insert permanent roof supports at different locations adjacent said temporary roof support.

3,892,101

METHOD OF ANCHORING AN ANCHORING BOLT IN A BORE HOLE

Rudolf Gruber, Karnten, Austria, assignor to GD-Anker Gebirgs-Duebel-Anker GmbH & Co. KG, Karnten, Austria

Filed June 25, 1973, Ser. No. 373,189

Claims priority, application Austria, June 26, 1972, 005473/72

Int. Cl. E21d *20/00*

U.S. Cl. 61—45 B **1 Claim**

1. A method of anchoring an anchor bolt having a pointed end in a bore hole having a bottom, comprising the steps of:

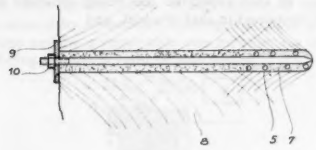
a. filling a container of a frangible material with balls having a diameter at most equal to the difference between the radius of said bore hole and the radius of said bolt and with an agent capable of reacting with mortar to accelerate the hardening thereof;

b. fitting a container into an end of a hose;

c. inserting said hose into said bore hole substantially to the bottom thereof;

d. forcing cement mortar activatable by said agent through said hose to drive said container out of the end of said hose against the bottom of said bore hole;

e. gradually withdrawing said hose while continuing to force cement mortar therefrom, thereby completing filling the bore hole ahead of said container with said cement mortar; and



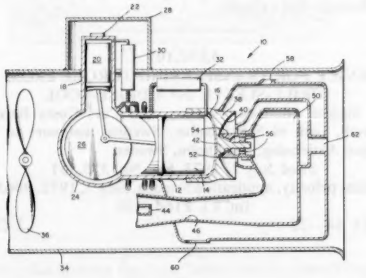
f. driving said bolt into said bore hole through the cement mortar ahead of said container and into said container to rupture same and release said agent for reaction with said mortar and simultaneously release said balls, said pointed end of said bolt wedging said balls against the wall of said bore hole.

3,892,102

VUILLEUMIER REFRIGERATOR HOT CYLINDER BURNER HEAD

Bruno S. Leo, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 7, 1974, Ser. No. 449,182
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **3 Claims**



1. A Vuilleumier-type refrigerator comprising:
a hot cylinder having a head, a concave curved thermal heat transfer surface on said head, a solid cone extending from said curved heat transfer surface;
a fluid fuel burner formed around said cone so that combustion flame impinges along said cone and onto said curved heat transfer surface so that products of the combustion pass along said heat transfer surface so that heat is provided for the hot cylinder of the Vuilleumier refrigerator.

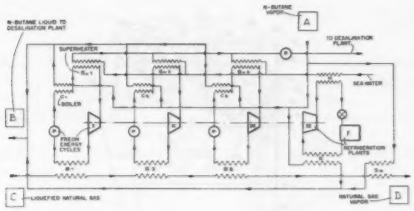
3,892,103

LIQUEFYING REFRIGERANT FOR WATER DESALINATION WITH LIQUEFIED NATURAL GAS AND AN INTERMEDIATE ENERGY CYCLE

Attilio Antonelli, Florence, Italy, assignor to Nuovo Pignone, S.p.A., San Donato Milanese, Italy

Filed June 12, 1973, Ser. No. 369,185
Claims priority, application Italy, June 13, 1972, 25580/72; July 13, 1972, 26927/72; Jan. 30, 1973, 19770/73
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 **10 Claims**

1. In a process for producing desalted water wherein liquified natural gas is converted to the vapor state and refrigeration units are released therefrom and transferred to a higher hydrocarbon in the vapor state which is converted to the liquid state and then delivers to water to be desalinated and refrigeration units necessary for desalination, the improvement which comprises transferring said refrigeration units from the liquified natural gas to said higher hydrocarbon by means of at least one closed energy fluid circuit which includes a heat exchanger for the absorption by said enerby fluid of refrigeration units from the liquified natural gas, a boiler for the absorption of heat from said higher hydrocarbon and the attendant delivery of refrigeration units thereto by said energy fluid, a superheater for delivering heat to said energy fluid, and a turbine adapted to transfer energy from said heater energy fluid to a compressor.

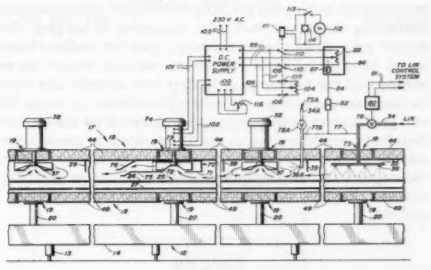


3,892,104

CRYOGENIC FREEZER WITH VARIABLE SPEED GAS CONTROL SYSTEM

David J. Klee, Emmaus, and Roger A. Howells, Orefield, both of Pa.

Filed Sept. 20, 1973, Ser. No. 399,769
Int. Cl. F25d *17/04*
U.S. Cl. 62—186 **13 Claims**

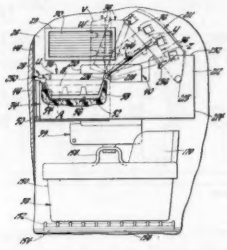


1. A cryogenic freezer for freezing a product comprising an elongated insulated tunnel including a conveyor belt, a cryogenic liquid injection system and a plurality of gaseous cooling zones through which the product is passed in heat exchange relationship with the gas resulting from vaporization of the injected cyrogenic liquid, each of said plurality of cooling zones including recirculation fan means for recirculating said gas in contact with the product, gas control fan means for controlling the net forward flow of gas through said cooling zones, variable speed motor means for driving said gas control fan means at various speeds, and a control system operatively connected to said variable speed motor means and to said cryogenic liquid injection system for automatically varying the speed of said gas control fan means as a function of the amount of cryogenic liquid being injected into said freezer.

3,892,105
HARVESTING APPARATUS FOR AUTOMATIC ICE MAKER

James A. Bernard, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1974, Ser. No. 516,687
Int. Cl. F25c *1/14*
U.S. Cl. 62—353 2 Claims



1. An automatic ice maker comprising a warpable grid in a tray adapted to contain water, refrigerating means for the freezing of ice in said grid, drive means for periodically pivoting the grid about one end corner thereof and the adjacent corner of said tray for removing the grid and ice cubes from said tray, a rapper assembly including rapper support means extending from said tray pivoted end, a rapper arm having one end pivotally supported on said rapper support means, resilient means biasing said rapper arm to a first position contacting stop means, said rapper arm having a plurality of longitudinally extending members thereon arranged along an arcuate path centered on said grid pivotal axis, a striker bar pivotally mounted on said grid extending radially outwardly from the free end of the grid front wall and resiliently biased for pivotal movement in one direction only, whereby upon said grid being rotated from a horizontal position in said tray to an overcenter position said bar engages the first one of the arm members momentarily halting the pivoting of said grid, said drive means continuing to power said grid imparting a warping force thereto prior to said bar overcoming said arm resilient biasing means pivoting said arm away from said stop means and permitting said bar to snap past the first arm member and impact on the next succeeding arm member to release ice cubes from said grid, and so forth insuring the release of all the ice cubes therefrom, said drive means being operative to cause reverse rotation of said harvested grid whereby said resiliently biased bar engages said arm members resulting in the bar pivoting in said one direction allowing said grid to be freely returned to said tray.

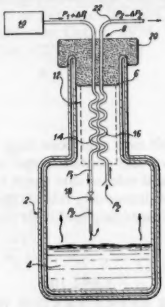
3,892,106
METHOD FOR REDUCING THE CONSUMPTION OF A CRYOSTAT AND A DEVICE FOR CARRYING OUT SAID METHOD

Pierre Roubeau, Palaiseau, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 26, 1974, Ser. No. 455,004
Claims priority, application France, Mar. 27, 1973, 73.10885
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 7 Claims

1. An auxiliary refrigeration unit for reducing the consumption of a fluid existing in liquid and vapor phases within a cryostat, the unit adapted to be connected to a source of high pressure fluid for supply at a temperature which is higher than the Joule-Thomson effect inversion temperature of the fluid, comprising:

a hollow cylinder adapted to be disposed in the cryostat and having an inlet connected to the source of pressurized gas to establish a high pressure flow circuit for the pressurized gas, a gas expansion unit connected to the outlet of said cylinder for expanding said pressurized gas in accordance with the Joule-Thomson effect, the pressure of the expanded gas at the outlet of said unit being at the pressure which prevails within the cryostat, and the liquefied portion of said expanded gas being returned into the liquid contained in said cryostat, and

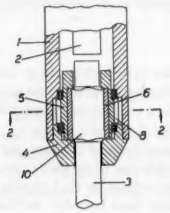


a plurality of tubes extending through said cylinder and adapted to receive both the nonliquefied portion of said gas after expansion and the vaporized portion of the liquid contained in the cryostat to establish a low pressure flow circuit for said portions and pass said portions in a heat exchange relation to said pressurized gas passing through said cylinder.

3,892,107
DEVICE FOR TRANSFERRING TORQUE FROM A DRILL-SLEEVE TO A DRILL-TOOL

Ebbe Sigfrid Adolfsson Handen, and Carl Gosta Bernhard Ekwall, both of Saltsjobaden, Sweden, assignors to Atlas Copco Aktiebolag, Stockholm, Sweden

Filed July 2, 1973, Ser. No. 375,351
Claims priority, application Sweden, July 7, 1972, 9063/72
Int. Cl. F16d *3/06*
U.S. Cl. 64—23 2 Claims



1. A coupling for transferring the torque to a drill tool which is reciprocated by percussive impacts in the housing of a rock drilling machine, comprising;

a. a drill sleeve mounted to rotate within the housing while being restricted against axial movement therein;

b. said drill sleeve having an exterior circular toothed surface meshing with a driven gear wheel;

c. an intermediate sleeve loosely fitted telescopically in an interior recess in said drill sleeve to permit substantially non-forcible removal therefrom while being restrained from any substantial axial movement therein;

d. the exterior surface of said intermediate sleeve and the facing surface of said recess having substantially corre-

sponding non-circular contours to provide driving engagement therebetween;

e. said intermediate sleeve having an interior surface of non-circular contour telescopically engaging a substantially correspondingly contoured portion of the drill tool to transfer the torque thereto while permitting axial reciprocation within the confines thereof;

f. said intermediate sleeve being restrained against axial movement by a shoulder defining the upper limit of said recess and by a removable cap member on the housing defining the lower limit of said recess.

3,892,108
KNITTING MACHINE, AND IN PARTICULAR FLAT KNITTING MACHINE

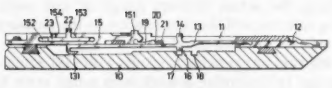
Wilhelm Hadam, Reutlingen, Germany, assignor to H. Stoll and Co., Reutlingen, Germany

Filed Mar. 26, 1974, Ser. No. 454,904

Claims priority, application Germany, Mar. 28, 1973, 2315334

Int. Cl.² D04B 7/00, 15/66

U.S. Cl. 66—75 **5 Claims**



1. In a flat knitting machine having needle controlling butts which are movable transversely in a tricked needle bed and can thereby be moved out of the needle tricks relative to controlling lock parts, and jacks which are displaceable into a latching position in which they hold the needle controlling butts in a depressed position relative to said lock parts, the jacks, which are arranged to be retracted from the latching position by other lock parts, having control butts, the improvement wherein the control butt of each jack constitutes itself a magnetic armature, the control butt of each jack is provided on a slide mounted for longitudinal displacement in the jack, the maximum range of this displacement being smaller than the maximum corresponding extent of the control lock passageway into which the said control butt projects, such that the control butt of each jack is mounted for limited longitudinal displacement relative to the jack, said projects into a control lock passageway which is defined in terms of travel by magnetic poles of at least one controllable magnet, said control lock passageway having a plurality of selection zones, controlled by magnetic poles and associated with particular phases of a knitting program for the needles, which selection zones are followed in the direction of travel of the jack control butts by deflector elements, and there being arranged at the end of the said control lock passageway an advancing cam which brings about displacement of all the jacks into their latching positions.

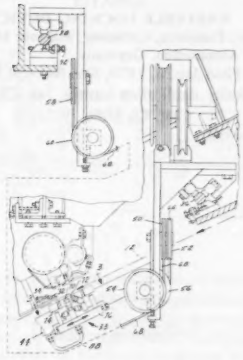
3,892,109
JET DYEING AND WASHING APPARATUS

Norman E. Klein, Inman, and Herbert R. King, Spartanburg, both of S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed May 17, 1974, Ser. No. 471,121

Int. Cl. B05c 5/00, 11/00

U.S. Cl. 68—205 R **11 Claims**



8. The apparatus of claim **6** wherein said apparatus includes at least four spaced apart frame members forming generally a rectangular shape, said cable system including at least two cables with the ends of each cable being fixed to diametrically opposite corners of said frame members.

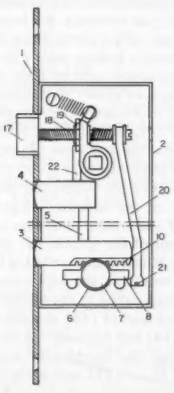
3,892,110
CYLINDER LOCKS

Valerio A. Poli, Bustamante 88, Santiago, Chile

Filed Feb. 6, 1974, Ser. No. 440,098

Int. Cl.² E05C 1/16

U.S. Cl. 70—107 **4 Claims**



1. A lock comprising a case which houses: at least one dead bolt, a cylinder constituted by a key-operated rotatable plug provided on its periphery with gear means, pin tumblers to block rotation of said plug, an exterior shell mounted on the walls of said case, a latch bolt having an axle, a mechanism to operate said latch bolt, a bar joined integrally to said dead bolt and displaceable to connect with the latch bolt axle, and rack means engaging and cooperating with said gear means through

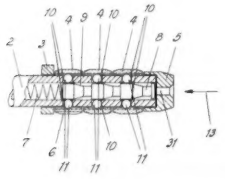
a groove provided in said shell to operate said dead bolt so that when said plug is key-operated, said gear means operate said rack means displacing longitudinally said dead bolt to blocking and unblocking positions, and when said dead bolt is displaced to a blocking position said bar is displaced simultaneously to a blocking position of said latch bolt, said pin tumblers being the only blocking means to prevent nonauthorized movement of said dead bolt.

3,892,111

VARIABLE LOCKING DEVICE

Horst Bresler, Penzberg, Germany, assignor to G.A.O. Gesellschaft fur Automation, Germany

Filed Jan. 4, 1974, Ser. No. 430,702
Claims priority, application Austria, Jan. 23, 1973, A565/73
Int. Cl. E05b *19/18*
U.S. Cl. 70—358 **6 Claims**



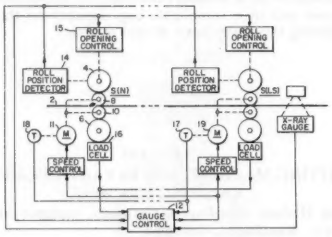
1. In a variable locking device with the key thereof, instead of the bit or web, comprising two or more adjusting rings which are seated on the stem of the key and are only capable of revolving freely after the key has been inserted in the lock, and in which, moreover, the lock comprises a number of test rings corresponding to the number of adjusting rings, with said test rings concentrically surrounding the adjusting rings subsequently to the insertion of the key, and with said test rings, along their circumference, comprising a number of tumbler means permitting an arbitrary, but between the adjusting rings and the test rings, only a compulsory turning in discrete steps, the key comprises a hollow stem (**2**) on which the adjusting rings (**4**) are arranged next to each other, and inside which there is provided an axially displaceable spindle (**8**) divided into a number of sections corresponding to the number of adjusting rings (**4**), with each of said sections comprising a tapering (**9**), that the key stem (**2**) per spindle section, comprises along its circumference a certain number of bores (**16**) in which balls (**11**) are supported for engaging the internal toothings (**12**) of the adjusting rings (**4**), and blocking the turning thereof and which, when the key is inserted, owing to the displacement of the spindle (**8**) into the tapered portion, drop out of the bores, thus permitting the adjusting rings to be revolved, that moreover the lock comprises a number of test rings (**17**) corresponding to the number of adjusting rings (**4**), as well as a core socket (**16**) capable of revolving inside the lock cylinder (**14**) and surrounding the test rings (**17**) in their entirety and that the tumbler or securer means consist of several bores (**25 . . . 27**) uniformly distributed over the peripheral area of the lock cylinder (**14**), the core socket (**16**) and the test rings (**17**), with said bores each being associated with a locking pin (**28 . . . 30**) and, in the defined angular positions of both the adjusting rings and the test rings, in alignment with one another, with one of the bores (**27**) of the test rings (**17**) having a long locking pin (**31**), and that moreover the locking pins (**30, 31**) are so designed as to be capable of engaging the notch (**6**) extending along the peripheral area of the adjusting ring (**4**).

3,892,112

ROLLING MILL GAUGE CONTROL

Andrew W. Smith, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 27, 1974, Ser. No. 455,159
Int. Cl. B21b *37/08*
U.S. Cl. 72—11 **10 Claims**



1. A method of controlling the delivery gauge of a work strip passing through at least one roll stand of a tandem rolling mill in accordance with a desired delivery gauge leaving the last rolling stand of said rolling mill, with said one roll stand having a pair of work rolls and a roll force measurement device, said method including the steps of

establishing a target delivery gauge for said work strip leaving said one roll stand in relation to said desired delivery gauge, the speed setting of said one roll stand and the speed setting of the last roll stand,

establishing the actual delivery gauge of said work strip leaving said one roll stand in relation to the measured roll force of said one roll stand,

comparing said target delivery gauge with said actual delivery gauge to determine a work strip gauge error leaving said one roll stand, and

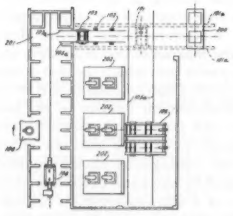
establishing the roll opening between said pair of work rolls of said one roll stand in relation to said gauge error.

3,892,113

METHOD AND APPARATUS FOR TRANSPORTING AND STORING HEAVY COMMODITIES

Heinrich Bauer; Karl-Heinz Dörner, both of Grevenbroich; Helmut Eberlin, Wyhlen; Hans Kaulen, Grevenbroich; Werner Pazurek, Grenzach-Horn; Heinz Richarz, Grevenbroich; Harro J. Taubman, Rheinfelden, and Gerhard Wolf, Grevenbroich-Neuenhausen, all of Germany, assignors to Eisenbau Wyhlen AG, Wyhlen and Vaw Leichtmetall GmbH, Bonn, both of, Germany

Division of Ser. No. 399,182, Sept. 20, 1973. This application July 22, 1974, Ser. No. 490,299
Int. Cl. B21b *39/00*
U.S. Cl. 72—250 **7 Claims**



1. Apparatus for manipulating heavy commodities, especially convoluted bulky metallic band stock or the like, in a plant wherein the commodities are treated at several stations

of at least one produ
discharge end and b
first and second co
provided at said rece
tion line, said produ
rolling mills and a
each of said rolling
vices arranged to tr
magazines and to and
level which is locate
holding said commod
rapidly accelerated
including at least on
level below said rolli
depositories commod
magazine.

CONTAINERS FO
METHOD OF
Hiroyoshi Taniguchi;
and Kenzi Ishimot
Industries, Ltd., U
Filed July

U.S. Cl. 72—272

1. In a container f
comprising an inner c
lar cross-sectional co
about said inner cylin
wherein the interface
is provided with a pl
portions correspondi
opening having small
having a predetermine
radial depth and exten
inner and outer cylin

11. A method of m
extrusion press of the
a noncircular axial op
said inner cylinder, sa
ing a plurality of axia
inner cylinder at port
said non-circular ope
areas, each recess ha
width and a predeter
outer cylinder about s
causing inner surface
trude into said recesse

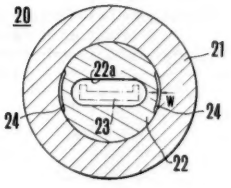
of at least one production line having a receiving end and a discharge end and being located at a first level, comprising first and second commodity storing magazines respectively provided at said receiving and discharge ends of the production line, said production line also comprising a battery of rolling mills and a depository for commodities adjacent to each of said rolling mills; and a plurality of transporting devices arranged to transport the commodities between said magazines and to and from said stations on at least one second level which is located above or below said first level while holding said commodities against swinging so that they can be rapidly accelerated or decelerated, said transporting devices including at least one lifting device movable along and at a level below said rolling mills and arranged to deliver to said depositories commodities which are withdrawn from said first magazine.

3,892,114

CONTAINERS FOR USE IN EXTRUSION PRESS AND METHOD OF MANUFACTURING THE SAME

Hiroyoshi Taniguchi; Toshio Wakabayashi; Takuma Maeda, and Kenzi Ishimoto, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed July 10, 1974, Ser. No. 487,049
Int. Cl. B21c *27/00*
U.S. Cl. 72—272 **14 Claims**



1. In a container for use in an extrusion press of the type comprising an inner cylinder having an opening of a noncircular cross-sectional configuration and an outer cylinder applied about said inner cylinder by shrinkage fit, the improvement wherein the interface between said inner and outer cylinders is provided with a plurality of circumferentially recesses at portions corresponding to the portions of said noncircular opening having small pressure receiving areas, each recess having a predetermined peripheral width and a predetermined radial depth and extending along the entire axial length of said inner and outer cylinders.

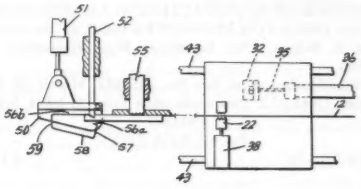
11. A method of manufacturing a container for use in an extrusion press of the class including an inner cylinder having a noncircular axial opening and an outer cylinder surrounding said inner cylinder, said method comprising the steps of forming a plurality of axial recesses on the outer surface of said inner cylinder at portions corresponding to the portions of said non-circular opening having small pressure receiving areas, each recess having a predetermined circumferential width and a predetermined radial depth, and applying said outer cylinder about said inner cylinder by shrinkage fit, thus causing inner surface of said outer cylinder to partially protrude into said recesses.

3,892,115

METHOD AND MACHINE FOR FORMING LAMINATIONS FOR USE IN SELF LOCKING CORES

Robert D. Mees; Armin F. Mittermaier, both of Fort Wayne, and Albert F. Wilcox, Yoder, all of Ind., assignors to Construction Materials Division, General Electric Company, Indianapolis, Ind.

Division of Ser. No. 378,999, July 13, 1973, Pat. No. 3,850,468. This application Mar. 20, 1974, Ser. No. 452,960
Int. Cl. B21d *43/28*
U.S. Cl. 72—294 **7 Claims**



1. A machine for making laminations from strip material for magnetic cores formed of a plurality of individual laminations, each of the laminations being generally rectangular and having one discontinuous side; said machine including:

a. a forming station for forming a section of the strip material into a generally rectangular configuration and severing the formed section from the strip;

b. a first powered gripper for advancing the strip to said forming station for formation of a first pair of sides of the lamination;

c. a second powered gripper for advancing the strip to said forming station for formation of a second pair of sides of the lamination;

d. first stop means for interrupting strip advancing motion of said first gripper, second stop means for interrupting strip advancing motion of said second gripper; and

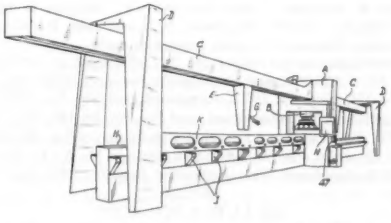
e. auxiliary stop means cooperating with said first gripper for providing strip advancing motion of said first gripper less than that allowed by said first stop whereby one of the first pair of lamination sides is provided with two discontinuous portions.

3,892,116

SHAPING PRESSES

Michel Maurice Gerard Sentourens, Saint-Nazaire, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed June 1, 1973, Ser. No. 365,868
Claims priority, application France, June 8, 1972, 72.20607
Int. Cl. B21d *11/04*
U.S. Cl. 72—305 **11 Claims**



1. A press device for stepwise curve shaping panels of elongate construction comprising

a vertical substantially rectangular press frame,
punch means displaceable in said frame for acting locally on the panel,
two beams extending perpendicularly on one side and on the other side of said press frame, respectively, at the level of the higher side of said frame, each beam being provided with a primary carriage supporting a rigid hanging bracket adapted to bear one of the opposed ends of the panel, displacements of said primary carriages being conjugated and measured when carrying the same panel.

3,892,117

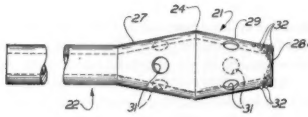
METHOD OF MANUFACTURING LIGHTWEIGHT DENTAL DRILL FOR HIGH-SPEED DENTAL HANDPIECE

Milton E. Nelson, 2302 Sandpiper Way, Pleasanton, Calif. 94566

Continuation-in-part of Ser. No. 345,482, March 28, 1973, Pat. No. 3,842,632. This application July 19, 1974, Ser. No. 490,000

Int. Cl. B21k *5/02*

U.S. Cl. 72—367 **8 Claims**



1. A method of manufacturing a lightweight dental drill suitable for use with a high-speed, air turbine, dental handpiece, said drill having a hollow head portion and an integrally formed hollow shank portion, comprising the steps of:
a. selecting a metal tubular member having:
i. an outside diameter at least about equal to the largest diameter of said head portion in the formed drill;
ii. an overall length at least about equal to the length of the formed drill; and
iii. a wall thickness sufficient to provide the necessary strength as said largest diameter of said head portion for drilling at air turbine speeds;
b. radially inwardly deforming said tubular member proximate a first end thereof to form said shank portion and to form a first area of said head portion extending from said largest diameter of said head portion to said shank portion, said first area sloping toward said shank portion; and
c. radially inwardly deforming said tubular member proximate a second end thereof to form a second area of said head portion extending from said largest diameter of said head portion toward said second end and sloping away from said shank portion.

3,892,118

METHOD OF MANUFACTURING BISTABLE MAGNETIC DEVICE

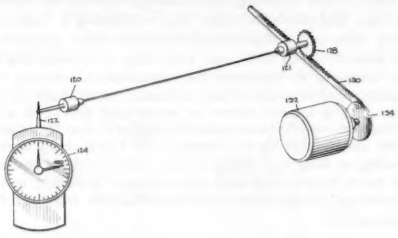
John R. Wiegand, Valley Stream, N.Y., assignor to Milton Velinsky, Atlantic Highlands, N.J. and John R. Wiegand, Valley Stream, N.Y., part interest to each

Continuation-in-part of Ser. No. 247,356, April 25, 1972, Pat. No. 3,820,090, and a continuation-in-part of Ser. Nos. 173,070, Aug. 19, 1971, abandoned, and Ser. No. 137,567, April 26, 1971, abandoned, and Ser. No. 86,169, Nov. 20, 1970, abandoned, and a continuation-in-part of Ser. No. 5,631, Jan. 26, 1970, Pat. No. 3,602,906, and Ser. No. 5,632, Jan. 26, 1970, abandoned. This application June 20, 1974, Ser. No. 481,226

Int. Cl. B21f *7/00, 45/00*

U.S. Cl. 72—371 **18 Claims**

1. The method of manufacturing a bi-stable ferro-magnetic wire having first and second portions with differing magnetic characteristics including relatively low and high coercivity, respectively, comprising the steps of:



applying longitudinal tension to a ferro-magnetic wire, and
applying cycling torsional strain to said wire.

3,892,119

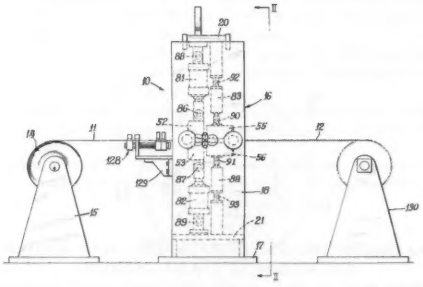
FORMING APPARATUS FOR SHEET MATERIAL

Kenneth J. Miller, Peoria; Paul H. Merritt, Morton, and Francis W. Fuller, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 4, 1974, Ser. No. 447,973

Int. Cl. B21d *13/02*

U.S. Cl. 72—385 **10 Claims**



1. A forming apparatus for transforming substantially flat, relatively thin deformable metal sheet material into narrowly grooved corrugations across such material, comprising:
means for feeding said sheet material along a predetermined path from an inlet to an outlet;
opposed first and second clamping members spaced on opposite sides of the path;
means for selectively moving said clamping members into engagement against opposite sides of the sheet material for clamping the material therebetween with said second clamping member defining a reaction member in abutting engagement against one side of the material and having an inlet-facing side generally normal to said path;
opposed first and second forming members spaced on opposite sides of said path in juxtaposition to their corresponding first and second clamping members and on the inlet side thereof, said first forming member including a relatively thin forming blade having opposite inlet and outlet sides, said second forming member being on the same side of the sheet material as the reaction member and including a die forming portion having an outlet-facing side facing the inlet-facing side of the reaction member and in predetermined laterally spaced relation thereto, and said forming blade being spaced intermediate the outlet-facing side of the die forming portion and the inlet-facing side of the reaction member in offsetting relation on the opposite side of the sheet material;

means for mounting each of the forming members for limited pivotal movement about an axis spaced a predetermined distance from their respective forming blade and die forming portion in a direction toward the inlet;

first means for moving the first forming member about its axis so that its forming blade is moved through an arc between a first position in which it is spaced from the sheet material and a second position in which it is in substantially parallel, closely spaced side-by-side relation with the inlet-facing side of the reaction member;

second means for moving said second forming member about its axis so that its die forming portion is moved through a similar arc between a first position in which it is spaced from the sheet material and a second position in which its outlet-facing side is in substantially parallel, closely spaced side-by-side relation with the adjacent side of the forming blade; and

means for sequentially operating said first and second means so that said sheet material is first folded in one direction about said reaction member by said forming blade and is subsequently folded in an opposite direction about said forming blade by said die forming portion so as to sequentially form the opposite sidewalls of said corrugations as the sheet material is fed through the apparatus.

3,892,120
RIVETING APPARATUS

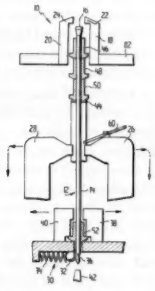
David John Sheffield, St. Albans, Hertfordshire; Paul Edward Prosser, Hemel Hempstead, and Bernard William Charman, Weybridge, all of England, assignors to Aerpat A.G., Switzerland

Continuation-in-part of Ser. No. 257,200, May 26, 1972, Pat. No. 3,828,603. This application July 10, 1974, Ser. No. 487,157

Claims priority, application United Kingdom, May 28, 1971, 18178/71; July 27, 1973, 35856/73

Int. Cl. B21j *15/34*

U.S. Cl. 72—391 **5 Claims**



1. Blind riveting apparatus comprising:

a mandrel including an elongated stem and a head at one end thereof;

a plurality of rivets slidably supported upon said mandrel, each of said rivets having a head end and a tail end;

abutment means for supporting the leading one of said rivets at a rivet setting station;

gripping means for moving said mandrel and said rivets toward said rivet setting station; and

means for advancing said rivets relative to said mandrel whereby said leading rivet is advanced to a position adjacent said rivet setting station at which position the tail end of said leading rivet abuts said head end of said mandrel while the head end of said leading rivet is adjacent to said abutment means and is adapted to engage said abutment means during a rivet setting operation.

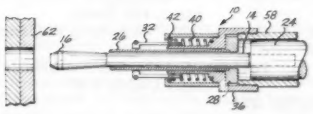
3,892,121
APPARATUS FOR COLD-WORKING HOLES

Louis A. Champoux, Seattle; Horace E. Hill, Renton, and Joseph L. Phillips, Bellevue, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sept. 12, 1973, Ser. No. 396,637

Int. Cl. B21d *41/02*

U.S. Cl. 72—393 **5 Claims**



1. An apparatus for cold-working holes comprising:

a. a sleeve of a plurality of lengthwise strips restrained around the periphery at one end, wherein the restraint to the sleeve comprises a longitudinally split sectionalized quill to which the sleeve is fastened,

b. a mandrel tapering to an enlarged diameter and thence to a reduced diameter slideably mounted inside the sleeve to act in combination inside a hole in a workpiece to radially expand the sleeve and cold-work the hole as the enlarged diameter of the mandrel passes through the hole, and

c. means for constraining the sleeve wherein said means comprises a ring encircling the quill and an elastic annular section between the ring and the quill.

3,892,122
HYDRAULIC PRESSES

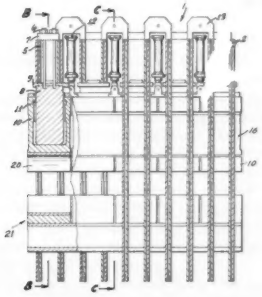
Donald Noel Snell, Bournemouth, England, assignor to Mannesmann-Meer Aktiengesellschaft, Monchengladbach, Germany

Filed Aug. 23, 1972, Ser. No. 283,167

Claims priority, application United Kingdom, Aug. 27, 1971, 40308/71

Int. Cl. B21j *9/12*

U.S. Cl. 72—453 **4 Claims**



1. In a press for the production of pipes, wherein the several parts are mounted in a frame the improvement comprising:

means defining a first shaped tool in the frame;

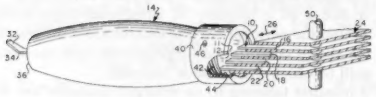
a plurality of parallelly disposed hydraulic cylinder/ram assemblies, each of the rams being mounted in stationary disposition in the frame

and hydraulically cooperating with the cylinder of the respective assembly for moving the respective cylinder towards the first tool upon application of hydraulic pressure to the cylinder;

each cylinder constructed to support a second press tool facing the first tool; and

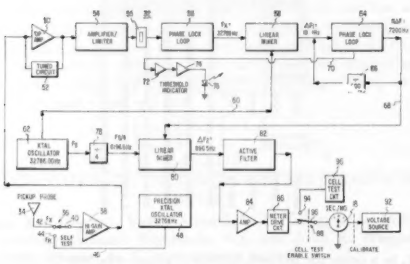
means for interconnecting the cylinders of the assemblies to obtain alignment of the second tools in direction transverse to the direction of cylinder movement and to obtain common movement in the alignment disposition upon application of hydraulic pressure to the cylinders of the assemblies.

3,892,123
FIX A FIN TOOL
Claude M. Baldwin, 3400 Whitesburg Dr., Huntsville, Ala. 35802
Filed Oct. 5, 1973, Ser. No. 404,014
Int. Cl. B21d *1/10*
U.S. Cl. 72—478 **5 Claims**



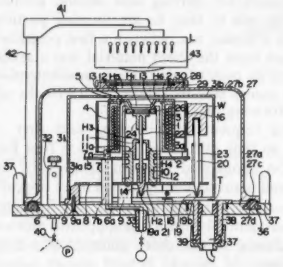
1. A fin straightening tool comprising:
a handle adapted to be gripped by the hand;
a mounting base on one end of said handle; and
a plurality of relatively flat spaced blades attached to said mounting base, each of said blades having a pair of relatively flat opposite surfaces, said surfaces of the different blades lying in substantially parallel planes, and said blades being positioned in different columns and rows, wherein a column would be along a line perpendicular to said surfaces of a said blade and a row would be along a line perpendicular to a said column.

3,892,124
WRISTWATCH ANALYZER
Robert O. Reese, Lancaster, Pa., assignor to Time Computer, Inc., Lancaster, Pa.
Filed June 14, 1974, Ser. No. 479,439
Int. Cl. G04b *17/00*
U.S. Cl. 73—6 **25 Claims**



1. A timing rate tester for wristwatches having an electrical time standard comprising a wristwatch support including an antenna for sensing electrical energy from the time standard of an operating wristwatch mounted on said support, a reference frequency source, means coupled to said antenna and said reference frequency source for comparing the frequencies of electrical signals from them, and a meter coupled to said comparison means for indicating the results of a comparison.

3,892,125
APPARATUS FOR USE IN MEASUREMENT OF THERMAL CONSTANT OF MATERIALS
Yoshiaki Nunogaki, Nagaokakyo, Japan, assignor to Sanki Engineering Ltd., Japan
Filed June 7, 1974, Ser. No. 477,468
Claims priority, application Japan, Aug. 10, 1973, 48-94474
Int. Cl. G01n *25/18*
U.S. Cl. 73—15 A **15 Claims**



1. An apparatus useable in measurement of a temperature transient characteristic of any of such materials as metals, alloys, synthetic and natural resins, ceramics and others, which comprises a source of light which emits a beam of light of relatively high temperature for a predetermined period of time; a testpiece cell positioned below said light source in alignment with a path of travel of said light beam, said cell including a base plate and an enclosure for defining a closed cell chamber, said enclosure having a light entrance opening closed by a transparent shield, said cell further including a support table rigidly supported above said base plate within said closed cell chamber, a first support rod having a lower end situated within a space between said support table and said base plate and substantially vertically extending in alignment with said light entrance opening, means for supporting said first support rod for up and down movement, a lever means pivotally supported within said space between said support table and said base plate and having one end pivotally connected to the lower end of said support rod, the other end of which is adapted to receive an external force, a receptacle adapted to support a sample of the material of a predetermined size thereon and carried by said first support rod at the other, upper end thereof, at least one pair of clamp finger members 180° spaced from each other about the lingitudinal axis of said support rod and being cooperative with said receptacle for, so long as the external force is continuously applied to that end of said lever means, clamping the sample material between said receptacle and said finger means under pressure determined by said external force while said support rod is upwardly biased, said sample material on said receptacle being in alignment with the path of travel of said light beam; and means for detecting variation of the initial temperature of said sample material which is caused by application of the light beam to said sample material held in position by said finger members and said receptacle.

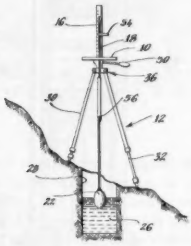
3,892,126
METHOD AND APPARATUS FOR FACILITATING TESTING THE LIQUID ABSORPTIVITY OF SOIL
John J. Curtin, Main St., South Britain, Conn. 06487
Filed Mar. 14, 1974, Ser. No. 451,051
Int. Cl.[2] G01F *23/08*
U.S. Cl. 73—38 **3 Claims**

3. The method of testing the liquid absorption quality of soil which comprises,
forming a hole of predetermined size in the soil at the test site and initially placing therein a predetermined volume of liquid,

providing a table top having an aperture extending through it and positioning the said top above the said hole,

providing a ruler extending up from the top substantially at a right angle to the top, and substantially at the level of the eyes of the person performing the test,

inserting a rod extending through the aperture in the top and providing guide means so that the rod can move up and down through the aperture in the top while remaining close to the ruler and in substantially parallel relation thereto,



disposing at the lower end of the rod below the top a float adapted when placed in the body of liquid in the hole to support the rod at a level determined by the level of the liquid in said hole,

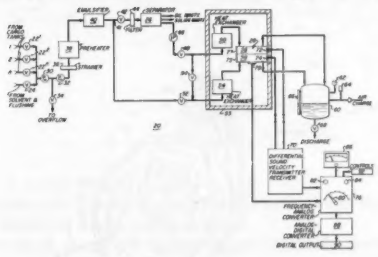
and providing the rod with marker means above the top coacting with the ruler means above the top for indicating the extent of movement of the rod and thus providing a measurement of the change in the liquid level within the hole within a measured period of time.

3,892,127

OIL DETECTION SYSTEM

Uldis Cirulis, Midland Park, and Ellis M. Zacharias, Jr., Ridgewood, both of N.J., assignors to Nusonics, Inc., Paramus, N.J.

Filed July 27, 1973, Ser. No. 383,405
Int. Cl. G01n *29/02*
U.S. Cl. 73—61.1 R **20 Claims**



1. In a system for measuring the concentration of hydrocarbons in water while the liquid is flowing from a source thereof, the improvement comprising:

means for selecting a continuous sample of the flowing liquid;

separator means for separating the hydrocarbons from the water to deliver a standard solution at its output;

means for diverting a portion of said sample to the separator means;

a differential transducer assembly having a first transducer assembly having a first electroacoustic transducer and a first housing, and a second transducer assembly having a second electroacoustic transducer and a second housing;

a liquid collector;

first connecting means connecting the standard solution output of the separator to the first housing and second connecting means connecting the first housing to the liquid collector such that the standard solution flows through the first housing;

third connecting means connecting the second housing to the source of the sample (unknown) and fourth connecting means connecting the second housing to the liquid collector such that the unknown flows through the second housing;

excitation means for exciting the first transducer and the second transducer to thereby produce an acoustic wave in each of the housings;

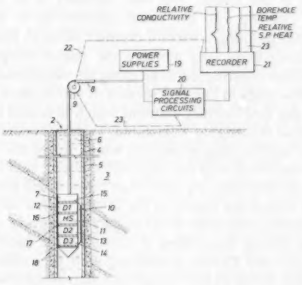
difference measuring means for measuring the difference between the sound velocity in the second housing and that in the first housing which difference is a function of the concentration fo hydrocarbons in the unknown.

3,892,128

METHODS FOR THERMAL WELL LOGGING

Harry Davis Smith, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 272,266, July 17, 1972, Pat. No. 3,807,227. This application Aug. 6, 1973, Ser. No. 385,773
Int. Cl. E21b *47/06*
U.S. Cl. 73—154 **6 Claims**



1. A method for thermal logging of a well borehole to provide a measure of the specific heat, the borehole ambient temperature, and the thermal conductivity of earth formations in the vicinity of the borehole comprising the steps of:

measuring the ambient temperature of earth formations in the vicinity of the borehole at a selected depth level;

heating the earth formations at said selected depth level by imparting a predetermined quantity of heat thereto;

measuring a first temperature of the earth formations at said selected depth level substantially simultaneously with said heating step and determining the temperature increase therein due to said heating step;

measuring, after a predetermined time interval, a second temperature of earth formations at said selected depth level and determining the temperature decrease therein due to thermal conductivity losses of heat to other surrounding formations;

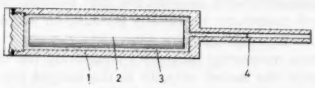
combining said ambient temperature measurement and said first temperature measurement according to a first predetermined relationship and deriving an indication of the specific heat of earth formations at said selected depth level; and

combining said first and second temerature measurements according to a second predetermined relationship and deriving an indication of the ratio of thermal conductivity to the square of the specific heat of earth formations at said selected depth level.

3,892,129
TEMPERATURE SENSING DEVICE

Mario Posnansky, Horgen, Switzerland, assignor to Haenni & Cie Aktiengesellschaft, Jegensdorf, Switzerland

Filed Sept. 17, 1973, Ser. No. 397,821
Claims priority, application Switzerland, Sept. 25, 1972, 13954/72; July 17, 1973, 10401/73
Int. Cl. G01k 5/00
U.S. Cl. 73—371 2 Claims



1. A temperature sensing device serving as a thermal-switch with a vessel containing an expansible liquid and at which merges a capillary, the improvement comprising two bodies possessing different coefficients of expansion in such a way that during a temperature change the volume of the vessel formed by said bodies and containing the expansible liquid changes, one body being a sleeve which essentially forms a wall of the vessel and the other body being arranged in said sleeve, the expansible liquid comprising a current-conducting liquid, and wherein a first contact element is secured in the sleeve, this contact element always being contacted by the liquid, the capillary is constructed in said other body which is arranged in the sleeve, and said capillary at its end remote from its opening into the vessel extends up to the tip of a contact pin defining a second contact element fixedly seated at said other body, and wherein the sleeve comprises a primary portion constructed as an elongate, rotationally symmetrical hollow body in one end section of which there is centrally inserted the first contact element which is sealed towards the outside and threadably adjustable, said sleeve having a substantially tubular-shaped section which forms the jacket wall of the vessel filled with the expansible liquid, said vessel being bounded at the inside by said other body which possesses said capillary and at the region of the contact pin a widened inner compartment, said other body fixedly supporting said contact pin, said sleeve possessing a closure disk pierced by the contact pin and fixedly connected with the other body, the closure disk being fixedly seated at a step-shaped widened end section of the sleeve primary portion.

3,892,130
DEEP SEA MICROBIOLOGICAL SAMPLING AND CULTURING APPARATUS AND METHOD

Clifford L. Winget; Kenneth W. Doherty, both of Woods Hole, and Carl O. Wirsen, Pocasset, all of Mass., assignors to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 11, 1974, Ser. No. 441,729
Int. Cl.[2] G01N 1/12
U.S. Cl. 73—425.4 R 5 Claims

1. A microbiological specimen sampler for acquiring samples of deep ocean water under ambient conditions comprising:

initially pressurized dual chamber means for receiving a water sample under ambient pressure at a controlled rate of flow in one of the dual chambers;

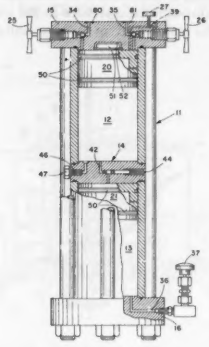
said controlled flow accomplished by further pressurizing a partially pressurized gaseous medium in the other of the dual chambers and a snubbing fluid exposed to said pressurized gaseous medium in said one of said chambers;

means at one end of said one chamber for admitting said ambient water thereinto and for accomodating recovery of the sample received in said sampler;

sample recovery means adapted for connection to said means at one end of said apparatus in sealing relationship therewith;

said recovery means including a chamber and passages communicating with said chamber and with passages to the sample in said apparatus;

aa slidable piston in said chamber dividing said chamber into separate cavities; and



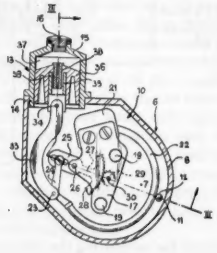
means for providing selective access to said cavities, whereby one of said cavities and the passages connected thereto may be filled with a selected inert fluid and thereafter closed and the other cavity may then be filled with a portion of said sample,

said portion recoverable from said other cavity by closing the passage connecting said one cavity and said sample and opening the access means for said other cavity.

3,892,131
INSTRUMENT FOR INDICATING THE DURATION AND DEPTH OF DECOMPRESSION STOPS IN DIVING

Carlo Alinari, Turin, Italy, assignor to Under Sea Industries, Inc., Compton, Calif.

Filed Oct. 19, 1973, Ser. No. 408,131
Claims priority, application Italy, Nov. 29, 1972, 70757/72
Int. Cl. G06g 5/00
U.S. Cl. 73—432 R 10 Claims

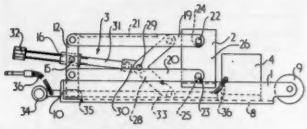


1. An instrument for indicating the depth and duration of decompression pauses during diving, comprising at least one analogic tissue simulator comprising a casing defining a fluid-tight sealed chamber filled with liquid, said casing having at least one portion deformable under the action of external pressure; pressure gauge means provided with a pointer contained in said chamber and mechanical non-elastic brake means contained in said chamber, and operatively connected to said pressure gauge to effect a truly aperiodical movement of the pointer of the pressure gauge means and having a semiperiod similar to that of the human tissue to be imitated.

3,892,132
VEHICLE JACK

William Henry Coton, Bartley Green, England, assignor to Dunlop Limited, London, England

Filed Apr. 16, 1973, Ser. No. 351,362
Claims priority, application United Kingdom, Apr. 22, 1972, 18805/72
Int. Cl. G01m 1/16; B60p 1/48
U.S. Cl. 73—457 10 Claims

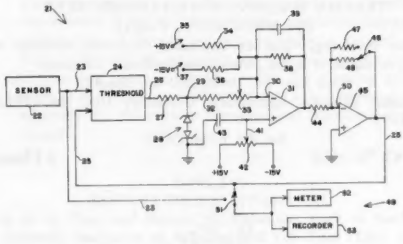


1. A vehicle jack comprising a support member to engage a vehicle member to be raised, means, to which the support member is connected, for raising and lowering the support member and a stand by means of which the support member may be supported after having been raised, the raising and lowering means being movable when the support member is supported by the stand between a first position wherein at least some of the vertical forces acting on the support member are taken by the raising and lowering means, and a second position wherein the whole of the vertical forces acting on the support member are transmitted to the stand.

3,892,133
STATISTICAL SOUND LEVEL ANALYZER

Robert W. Quinn, Swampscott, Mass., assignor to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Sept. 13, 1973, Ser. No. 396,769
Int. Cl. G01r 19/16; G01l 1/00
U.S. Cl. 73—556 10 Claims



1. A sensor system comprising:

a sensor for providing a sensor signal indicative of the amplitude of a preselected stimulus;

threshold means for comparing an adjustable threshold signal to the sensor signal and providing a test signal with an amplitude of a first level if the sensor signal exceeds the threshold signal and of a second level if the threshold signal exceeds the sensor signal, whose duty cycle is indicative of the percent of time that the sensor signal exceeds the threshold signal;

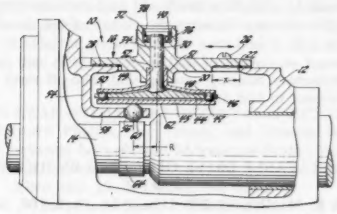
comparator means for receiving the test signal and comparing the duty cycle thereof to a predetermined ideal duty cycle, and wherein said comparator means generates an error signal which responds to the duty cycle comparison by adjusting the threshold signal as required to cause the duty cycle of the test signal approach the ideal preselected duty cycle; and

output means for sampling the threshold signal, which is indicative of the level exceeded by the sensor signal a percentage of the time equal to the present ideal duty cycle, and providing an output indicative thereof.

3,892,134
SPEEDOMETER DRIVE ARRANGEMENT

Lubomyr O. Hewko, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 13, 1974, Ser. No. 478,840
Int. Cl. F16h 37/00, 15/08, 13/06
U.S. Cl. 74—12 4 Claims

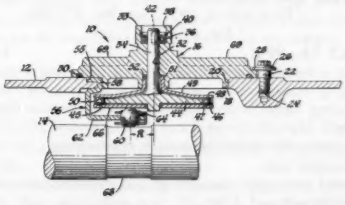


1. A continuously variable speedometer drive arrangement comprising a transmission extension housing, a transmission output shaft extending through said extension housing, a rectangular opening formed in a side of said extension housing, a speedometer drive housing slidably mounted on said extension housing, rectangular guide means formed on said speedometer drive housing and mounted in said rectangular opening, said guide means being a predetermined amount shorter than said rectangular opening, fastener means for securing said speedometer drive housing on said extension housing, a speedometer take-off shaft opening formed through said drive housing, a speedometer take-off shaft rotatably mounted in said take-off shaft opening, a belleville spring-type planetary unit operatively connected to said speedometer take-off shaft, a reaction member connected to said extension housing, and a drive-member rotatably mounted on said reaction member and maintained by said belleville spring-type planetary unit in a driving relationship intermediate said transmission output shaft and said speedometer take-off shaft, the distance between the center of said drive-member and the axis of said take-off shaft being variable in response to manual linear movement of said guide means in said rectangular opening in said extension housing.

3,892,135
SPEEDOMETER DRIVE ARRANGEMENT

Lubomyr O. Hewko, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 13, 1974, Ser. No. 478,843
Int. Cl. F16h 37/00, 15/08, 13/06
U.S. Cl. 74—12 5 Claims



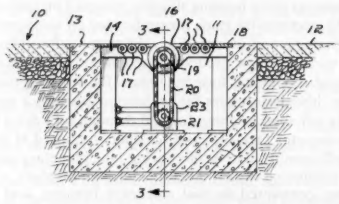
1. A continuously variable speedometer drive arrangement comprising a stationary housing, a drive shaft rotatably mounted in said stationary housing, an opening formed in a side of said stationary housing, a speedometer drive housing movably mounted on said stationary housing, guide means

formed on said speedometer drive housing and mounted in said opening, fastener means for securing said speedometer drive housing on said stationary housing, speedometer take-off shaft mounting means formed on said speedometer drive housing off-set from the center of said housing, a speedometer take-off shaft rotatably mounted in said take-off shaft mounting means, a belleville spring-type planetary unit operatively connected to said speedometer take-off shaft and to said speedometer drive housing, a reaction member connected to said stationary housing, and a drive-member rotatably mounted on said reaction member and maintained by said belleville spring-type planetary unit in a driving relationship intermediate said drive shaft and said speedometer take-off shaft, the distance between the center of the drive-member and the axis of said take-off shaft being variable in response to manual movement of said guide means in said opening in said stationary housing causing said take-off shaft to move with respect to said drive-member.

3,892,136
ROTATABLE DRIVE OPERATED BY HIGHWAY TRAFFIC

Joseph R. MacDonald, 200 Leisure Ln., Apt. 108, Stoneham, Mass. 02180

Filed Dec. 26, 1973, Ser. No. 427,717
Int. Cl. F16h *37/00*
U.S. Cl. 74—14 **10 Claims**



1. A traffic operated rotatable drive for a machine comprising a chamber below but having an opening through the surface of a highway, traffic supporting means spanning said opening and including a main roll extending transversely of the path of vehicles travelling along said highway in one direction and a plurality of idler rolls on both sides of and parallel to said main roll providing flanking areas dimensioned to prevent the engagement of a tire wheel and it and the pavement at the same time, all of said rolls exposed to be engaged by the wheels of said vehicles, a drive shaft for said machine, and a connection between said main roll and said shaft.

3,892,137
TRANSFER BAR DRIVE MECHANISM

Klaus Menzel, Orchard Lake, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed July 9, 1973, Ser. No. 377,360
Int. Cl. F16h *21/44*
U.S. Cl. 74—99 R **14 Claims**

1. In a transfer machine of the type including a transfer bar engaging transferred objects with said transfer bar during advancing linear movement thereof, the improvement comprising:

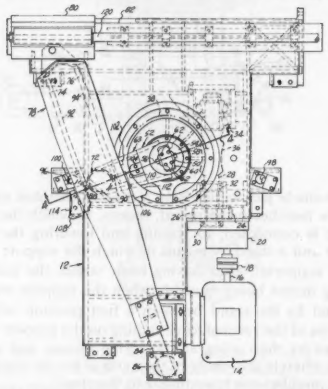
a transfer bar drive mechanism comprising:

a transfer arm;

means drivingly connecting said transfer arm with said transfer bar;

means supporting said transfer arm for oscillating movement;

drive means oscillating said transfer arm including a drive member, and means oscillating said transfer arm in response to movement of said drive member including cooperating cam surfaces formed on said drive member and said transfer arm providing a driving engagement between said transfer arm and said drive member, said drive means also including means discontinuing said oscillation of said transfer arm after a predetermined movement of said drive member in said at least one direction by disengagement of said driving engagement of said cooperating cam surfaces formed on said transfer arm



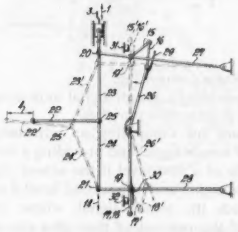
and said drive member upon further movement of said drive member in addition to said predetermined movement;

means restraining said transfer arm from oscillatory movement whenever said drive means discontinues said driving engagement between said cooperating cam surfaces formed on said transfer arm and said drive member after said predetermined movement of said drive member.

3,892,138
TEXTILE MACHINE WITH PERIODICALLY RECIPROCATING PARTS

Rainer Vomberg, Monchen-Gladbach, Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Germany

Filed Nov. 15, 1972, Ser. No. 306,573
Claims priority, application Germany, Dec. 24, 1971, 2164557
Int. Cl. F16h *21/44*
U.S. Cl. 74—110 **8 Claims**

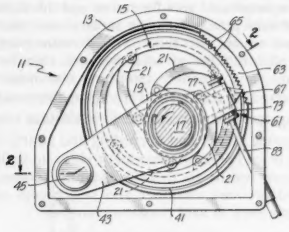


3. Apparatus according to claim **2** wherein said shifting lever means (**15–18, 26–28**) comprise a first (**15, 16, 27**) and a second (**17, 18, 28**) group of pivotally mounted control levers movable into a dead center position in which at least three of the pivotal axes of each group connecting the levers of each group are generally aligned, whereby either of said first (**15, 16, 27**) and second (**17, 18, 28**) group of levers are selectively held stationary as said actuating means (**22, 23, 24**) continue to operate.

3,892,139
VARIABLE SPEED TRANSMISSION

Trevor L. Harris, Costa Mesa, Calif., assignor to Harris Dynamics, Costa Mesa, Calif.

Filed May 9, 1974, Ser. No. 468,412
Int. Cl. F16h *29/00, 29/04, 27/02*
U.S. Cl. 74—116 **17 Claims**

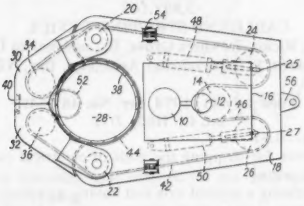


1. A variable speed transmission comprising:
first and second rotatable members;
mounting means for mounting said first and second rotatable members for rotation about first and second rotational axes, respectively;
at least one drive element;
first means for drivingly coupling the drive element to the first rotatable member;
second means for drivingly coupling the drive element to the second rotatable member at a predetermined location;
said first means including one-way clutch means mounted on and substantially circumscribing the first rotatable member for providing a driving connection between said drive element and the first rotatable member in one direction about said first rotational axis and to allow the first rotatable member to rotate about said first rotational axis in the opposite direction whereby one of said rotatable members can drive the other of said rotatable members; the rotation of said second rotatable member causing said predetermined location to circumscribe a region, said first rotational axis extending through said region; and
said mounting means including means for allowing adjustment in the relative radial position of said rotational axes whereby the drive ratio between said members can be varied.

3,892,140
ROTARY DRIVE APPARATUS

Roy K. N. Fox, and Rowan W. Patterson, both of Norfolk, England, assignors to Weatherford Oil Tool (UK) Ltd., Norfolk, England

Filed May 1, 1974, Ser. No. 465,947
Claims priority, application United Kingdom, May 7, 1973, 21753/73; Nov. 2, 1973, 51078/73
Int. Cl. F16h *7/00;* **E21b** *3/04*
U.S. Cl. 74—224 **8 Claims**

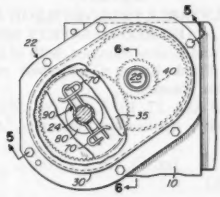


1. A rotary drive apparatus, for applying rotational torque to a cylindrical member, comprising a body structure including a recess to receive said cylindrical member, a drive wheel journalled on said body structure, a plurality of idler wheels journalled on said body structure, an endless loop trained round said drive wheel and around said idler wheels and adapted to form a re-entrant bight in said recess, said body structure including at least one jaw bearing at least one of said idler wheels and positioned adjacent said recess, said jaw being pivotable between an open position in which said recess is open for insertion and removal of said cylindrical member from said bight and a closed position in which said bight is clasped about said cylindrical member, means for retaining said at least one jaw in said closed position, and means for displacing at least another of said idler wheels remote from said jaw for adjustment of the size of said bight and to tension said loop.

3,892,141
LANDING GEAR WITH SHAFT DETENT CLIP RETAINER

Charles Edward Phillips, Jr., Mason, and Thomas Robert Wells, Cincinnati, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Filed Nov. 19, 1973, Ser. No. 417,119
Int. Cl. G05g *9/12;* **F16h** *3/30*
U.S. Cl. 74—475 **4 Claims**



1. In a geared speed reduction crank mechanism for a semi-trailer landing gear, the improvement comprising a gear case having a wall, means in said wall defining a bearing opening, a bearing removably received in said opening, a hand crank shaft received in said bearing and supporting gear means thereon, said shaft being movable axially in said bearing to select different gear ratios for raising and lowering the landing gear, means in said shaft defining axially-spaced grooves corresponding to selectable axial shaft positions, a generally C-shaped elongated detent spring clip on said shaft having a pair of parallel legs with opposite ends overlying said wall and a central portion thereof selectably engageable with said grooves, and a pair of clip retainers on said wall positioned on diametric opposite sides of said opening and defining therebetween a space for access to insert and remove said bearing, said retainers each having a leg portion extended axially of the shaft in the space between said clip legs and terminating in a laterally turned retainer portion overlying said wall in spaced relation thereto defining with said wall a clip-receiving space, said retainer portions being positioned to engage said clip adjacent the opposite ends thereof and restrain it against axial movement while permitting unrestricted opening and closing movement of the legs thereof with said shaft movement.

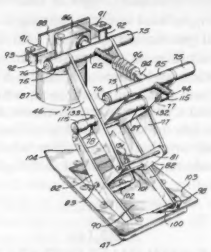
3,892,142
COMPACTOR

Robert F. Karls, Hales Corners, and James H. Enright, Racine, both of Wis., assignors to Emerson Electric Company, St. Louis, Mo.

Division of Ser. No. 177,385, Sept. 2, 1971, Pat. No. 3,772,984. This application Apr. 23, 1973, Ser. No. 353,846
Int. Cl. G05g *1/04*
U.S. Cl. 74—521 **5 Claims**

1. A scissors linkage comprising laterally spaced sets of scissors links each set comprising inner and outer interconnecting links, a first laterally extending torque arm rigidly

interconnecting the innermost links of said sets and free of connection to the outermost links of said sets, a second laterally extending torque arm rigidly interconnecting the outer-



most links of said sets and free of connection to the innermost links of said sets, said torque arms transmitting forces between interconnected links of said sets to balance forces as between said sets.

3,892,143

PITMAN ADJUSTABLE IN LENGTH FOR A PRESS WITH HYDRAULIC OVERLOAD SAFETY MECHANISM

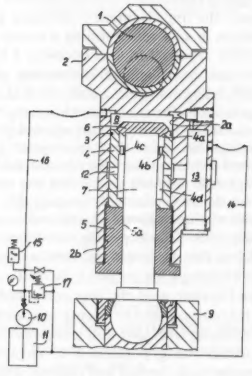
Heinz Kleister, and Walter Sommer, both of Essen, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Aug. 27, 1973, Ser. No. 392,022

Claims priority, application Germany, Aug. 26, 1972, 2242067

Int. Cl. G05g *15/08*

U.S. Cl. 74—583 **3 Claims**



1. In combination with a press, a hydraulic overload safety device comprising a pitman adjustable in length for presses and similar machine tools, which includes: pitman housing means having a central blind bore opening in one direction and having its open end on the inside thereof provided with threads, sleeve means reciprocable in said bore, threaded spindle means threadedly engaging said threaded open end of said pitman housing means, and supporting said sleeve means, sealing means resting on said sleeve means, a connecting rod having one of its ends connected to said sealing means and being reciprocably guided by and in said sleeve means and in said threaded spindle means, the other end of said connecting rod being connectable to a ram, said sealing means together with the adjacent portion of said sleeve means and said pitman housing means defining a pressure chamber, pump means having a suction side, liquid storage means communicating with said suction side, said pump means also having a pressure side for communication with said pressure chamber to deliver liquid under pressure thereto and establish a pressure in said pressure chamber sufficient to press said sealing means in a liquid-tight manner against said sleeve means while pressing said sleeve means against said threaded spindle means thereby establishing a firm frictional locking connection between the threaded portion of said spindle means and the thread of said open end of said pitman housing means, said sleeve means having recess means surrounding said connecting rod and normally sealed relative to said pressure chamber by said sealing means, and means establishing communication between said recess means and said storage means, said connecting rod being operable in response to a pressure encountered during a pressing stroke and exceeding and acting counter to the pressure in said pressure chamber to lift said sealing means off said sleeve means to thereby establish communication between said pressure chamber and said recess means and relieve the pressure in said pressure chamber.

3,892,144

DRUM MOTOR

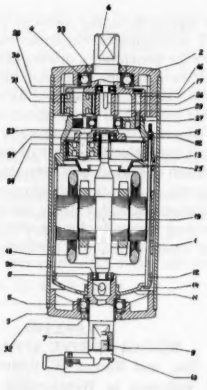
John Kirk Kirkegaard, Hoje Sandbjerg DK, Holte 2840, Denmark

Filed May 1, 1973, Ser. No. 356,181

Claims priority, application Denmark, May 4, 1972, 2211/72

Int. Cl. F16h *1/28*

U.S. Cl. 74—805 **4 Claims**



2. A drum motor as recited in claim **1**, and further comprising end covers on said outer drum through which said journals extend.

3,892,145

CABLE END STRIPPING DEVICE

Edward H. Richie, Downers Grove, Ill., assignor to Industrial Development & Experimental Associates, Inc., Villa Park, Ill.

Filed July 11, 1974, Ser. No. 487,549

Int. Cl. H02g *1/12*

U.S. Cl. 81—9.51 **7 Claims**

1. A device for stripping the ends of electrical cable, said device comprising:

a hub defining a central axis and having a central aperture extedning therethrough aligned with said axis through which the cable end may be extended from one side of said hub to the stripping position of same,

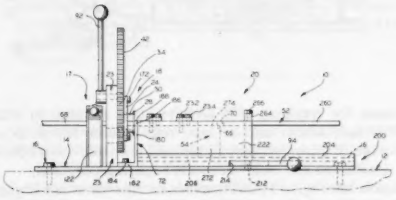
means for clamping the cable end against movement laterally and longitudinally thereof,

a plurality of swing levers pivotally mounted on said hub,

said levers each carrying a cutting blade at one side of same, an actuator mounted for pivotal movement about said axis relative to said hub,

said levers each being pivotally connected to said actuator with said cutting blades disposed for swinging movement toward and away from said axis on pivotal movement of said actuator member about said axis between positions in cutting relation with the jacket for cutting the jacket and positions disposed to be free of the cable jacket when disposed in said aperture,

means for moving said actuator about said axis of said hub to move said blades between said positions,



a slide structure positioned on the other side of said hub, said slide structure comprising:

a slide member mounted for movement toward and away from said hub in substantial parallelism to said axis,

said member carrying a stop aligned with said axis against which the cable end may be disposed relative to the hub to define the stripping position of the cable end,

said member mounting a pair of opposed clamping jaws disposed on either side of said axis, between said stop and said hub, for gripping the jacket of a cable end extended through said hub to said stop,

and means for moving said slide member away from said hub when the jacket has been severed by said blades for stripping the severed jacket end from the cable end.

3,892,146

ELECTRIC CONTROL FOR AN ELECTRIC MOTOR OPERATED NUT FASTENING TOOL

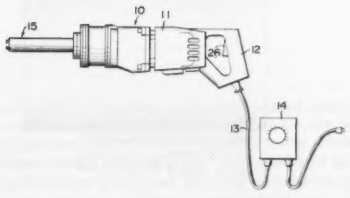
Hiroshi Yasoshima, Chigasaki, Japan, assignor to Shibaura Engineering Works, Ltd., Tokyo, Japan

Filed Aug. 28, 1974, Ser. No. 501,341

Claims priority, application Japan, Aug. 31, 1973, 48-97874; Nov. 28, 1973, 48-133764

Int. Cl. B25b

U.S. Cl. 81—52.4 R **7 Claims**



1. A nut fastening tool adapted for use with a nut setting adaptor, comprising:

a body portion enclosing said nut fastening tool, said body portion adapted to have said nut setting adaptor removably mounted thereon,

a reversible electric motor for driving said nut setting adaptor mounted in said body portion,

a manual switch for energizing said motor; and,

an electric control circuit coupled to said motor for controlling the operation thereof, said control circuit including a forward driving circuit and a reverse driving circuit, at least a pair of thyristors, one of which is used for switching said forward driving circuit on and off, and the other of which is used for switching said reverse driving circuit on and off, said control circuit further including means responsive to a predetermined forward driving current flowing through said motor for controlling said thyristors to switch said forward driving circuit off and said reverse driving circuit on;

whereby a nut is tightened by said fastening tool and then automatically released from nut setting adaptor when completely tightened.

3,892,147

APPARATUS FOR SCREWING HEADLESS THREADED FASTENERS

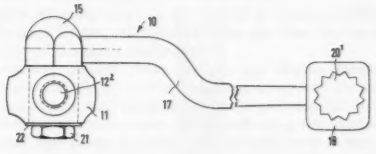
Christian Flaig, Muhlstrasse 1, Aldingen, Germany

Filed Oct. 31, 1973, Ser. No. 411,305

Claims priority, application Germany, Mar. 19, 1973, 2313609

Int. Cl. B25b *13/50*

U.S. Cl. 81—53.2 **11 Claims**



1. A screwing tool suitable for screwing a headless threaded fastener such as a staybolt or studbolt, the tool comprising:

a receiver head having at least one threaded hole for threadingly receiving the inner free end of the threaded fastener;

a tensioning eccentric pivotally connected to said receiver head;

the pivotal axis of said tensioning eccentric being arranged transversely to the axis of the threaded hole;

said tensioning eccentric including eccentric means arranged to be brought into axial alignment with said threaded hole upon rotation of said tensioning eccentric for directly contacting the inner free end of a threaded fastener and exerting a force on the inner free end of the threaded fastener, when such fastener is threadingly inserted in said threaded hole, to lock the fastener against rotation relative to said hole; and

a hand lever connected to said tensioning eccentric to rotate said eccentric means.

3,892,148

ADJUSTABLE POWER SPINNING TONG

Mark H. Wiley, Pasadena, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.

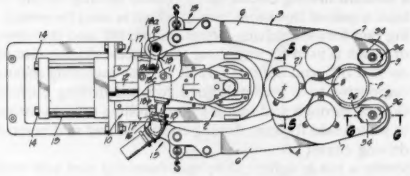
Filed Aug. 1, 1974, Ser. No. 493,993

Int. Cl. B25b *17/00*

U.S. Cl. 81—57.18 **18 Claims**

1. A powered pipe spinning tong comprising: a frame structure, a pair of elongated levers, pivot means pivotally mounting said levers on said frame structure with said levers extending in opposed laterally spaced relation, said levers having opposed actuating arms at one side of said pivot means and opposed pipe gripping arms at the other side of said pivot

means, pipe gripping roller means carried by said gripping arms for actuation into gripping engagement with a pipe upon spreading of said actuating arms, actuator means for spreading said actuating arms, drive means for rotation of said pipe



gripping roller means and a pipe gripped thereby, and adjustor means for adjusting said actuating arms relative to said actuator means to enable said pipe gripping roller means to grip and rotate pipe of a range of sizes.

3,892,149

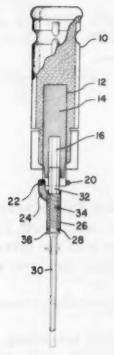
MULTIPLE HAND TOOL

Allan Rydberg, 76 Chapman Ave., Warwick, R.I. 02886

Filed Jan. 6, 1975, Ser. No. 538,509

Int. Cl.[2] B25B *13/48*

U.S. Cl. 81—71 **10 Claims**



1. A multiple hand tool construction comprising a cylindrical handle, a socket member mounted axially in said handle, said socket member having an axial, hexagonal opening, a plurality of sleeve holders pivotally mounted around the lower end of said socket member, a tool having a hex base mounted in each sleeve holder, means for resiliently retaining said tools in said holders, whereby said holders may be pivoted into axial alignment with said socket member to insert a tool base into said socket opening, and means for retaining said tools in pivoted position on said handle.

3,892,150

SELF-ADJUSTING OPEN OR CLOSED-END RATCHET WRENCH

Billy M. Horton, 3238 Rodman St., N.W., Washington, D.C. 20008

Continuation-in-part of Ser. No. 203,310, Nov. 30, 1971, abandoned. This application May 2, 1973, Ser. No. 356,429

Int. Cl. B25b *13/12*

U.S. Cl. 81—179 **26 Claims**

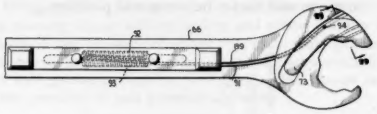
1. A ratcheting end wrench having

a handle terminating at at least one end in a nut engaging jaw member,

said jaw member having interior surfaces defining nut engaging surfaces,

a pawl having a generally arcuate body member and an elongated body member including an arcuate end surface adjacent said arcuate body member generally transverse to the elongated dimension of said elongated body member, said elongated body member defining nut engaging surfaces in opposition to said nut engaging surfaces of said jaw member,

said wrench having at least one generally arcuate recess opening into the interior of said jaw member, and having approximately the same curvature as said arcuate body member of said pawl,



means for retaining said arcuate body member in sliding contact within said at least one arcuate recess in said wrench for movement within said arcuate recess between innermost and outermost nut engaging positions,

means biasing said pawl towards its innermost nut engaging position,

the center of curvature of said generally arcuate recess lying approximately along the perpendicular bisector of a line defined by the path of movement between innermost and outermost nut engaging positions of a nut engaging region of said pawl,

said center of curvature lying at a distance from said line equal to approximately 3 to 4 times the distance from the center to a flat surface of a nut to be engaged by said wrench.

3,892,151

TUBE TAPERING APPARATUS

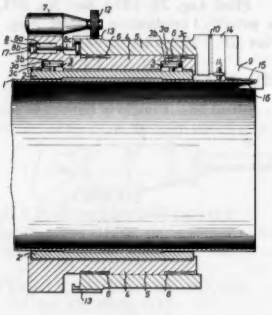
Karl Kriechbaum, and Karl Ahrens, both of Kassel, Germany, assignors to Licentia-Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed June 18, 1974, Ser. No. 480,923

Claims priority, application Germany, June 23, 1973, 2332120; June 23, 1973, 23463

Int. Cl. B23b *3/22*

U.S. Cl. 82—4 C **14 Claims**



1. An apparatus for conically tapering an end of a tube having an axis, comprising in combination:

a. support means engaging the outer face of said tube;

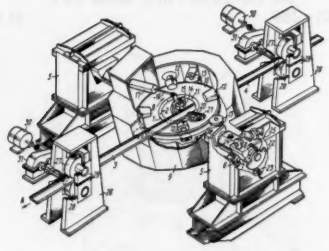
b. tightening means for clamping said support means to said tube;

c. a cylindrical carrier member surrounding said support means and having an axis coinciding with the tube axis when in place on the tube;
d. connecting means for stationarily attaching said carrier member to said support means;
e. a cylindrical mounting member surrounding said carrier member;
f. bearing means supporting said mounting member on said carrier member;
g. first motor means mounted on said carrier member and connected to said mounting member for rotating the latter relative to said carrier member;
h. second motor means connected to said mounting member for linearly displacing the latter relative to said carrier member;
i. a machining tool disposed adjacent an end of said mounting member for moving together with said mounting member to provide a conical taper on the tube end; and
j. securing means for attaching said machining tool to said mounting member.

3,892,152
METHOD OF REMOVING EXCESS METAL FROM CURVED SURFACES OF LONG-SIZED ARTICLES AND AN INSTALLATION TO REALIZE SAME

Iosif Abramovich Almen, ulitsa Chubarya, 9, kv. 89; Efim Elevich Krasner, ulitsa Karla Marxa, 43, kv. 42; Vladimir Izrailevich Dunaevsky, ulitsa Oktyabrskoi revoljuts 11, 27, kv. 9, all of Slavyansk, and Ivan Nikitich Kireev, ulitsa Lenina 159, kv. 21, Cherepovets, all of U.S.S.R.

Filed May 16, 1974, Ser. No. 470,554
Claims priority, application U.S.S.R., May 17, 1973, 1924590; Nov. 14, 1973, 1966307
Int. Cl. B23d *1/00*; B26d *1/12*
U.S. Cl. 83—56 **7 Claims**

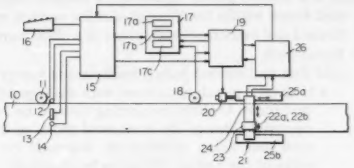


1. A method of removing production-caused excess metal from curved surfaces of long-sized metal articles, consisting in that a ring-shaped tool with a cutting edge at the intersection of the inner and end surfaces thereof is slipped over an article to be machined and positioned at an angle to the longitudinal axis of said product, and then a relative displacement is imparted to said cutting tool and said article to provide for the interaction of the cutting tool and the work surface, such that the article moves only progressively, while the cutting tool is only rotating, the angle of inclination of said cutting tool to the longitudinal axis of said product being selected depending on the curvature of the surface being machined.

3,892,153
SYSTEM FOR CUTTING PIECES FROM A TRAVELING STRIP OF SHEET MATERIAL

Tetsuji Kato, Otake, Japan, assignor to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jan. 17, 1974, Ser. No. 434,065
Claims priority, application Japan, Jan. 18, 1973, 48-8170
Int. Cl. B29c *17/10*; B23d *45/02*
U.S. Cl. 83—100 **15 Claims**



1. A system for cutting sheet pieces from a traveling strip of sheet material comprising:

means for measuring a length of the traveling strip of sheet material, said measuring means emitting an electric signal in response to measurement of a length of the traveling strip;

means for detecting a faulty portion in the traveling strip of sheet material, said detecting means emitting an electric signal upon detection of a faulty portion;

means for presetting into the system at least two different lengths for the sheet pieces to be cut from the traveling strip of the sheet material;

computing means connected to the length measuring means, the faulty portion detecting means and the presetting means, said computing means carrying out a specified computation comprising confirming the position of each said faulty portion in the traveling strip in response to signals from said length measuring and faulty portion detecting means, detecting each length of each usable longitudinally extending portion between adjacent said confirmed positions of said faulty portion in the traveling strip or between said confirmed positions of said faulty portions and the immediately previous or subsequent severed end of the sheet material, and determining a ratio of numbers of sheet pieces of said at least two different lengths in said presetting means for obtaining an entire combined length which is closest to the length of each said usable sheet portion, said computing means further storing the ratio of numbers of sheet pieces for each said usable sheet portion of the traveling sheet and then sequentially emitting signals, each indicative of a command for initiation of severing of each of said different lengths of sheet pieces from each said usable sheet portion on the basis of said stored sheet number ratio; and

severing means connected to said computing means for severing sheet pieces from the traveling strip of the sheet material in response to respective said sequential signals indicative of commands from said computing means.

3,892,154
STRUCTURAL STEEL PUNCH

Marcus L. Duffy, 3105 N.W. 29, Oklahoma City, Okla. 73107

Filed Dec. 12, 1973, Ser. No. 424,243
Int. Cl. B26d *5/02*, *5/12*
U.S. Cl. 83—368 **6 Claims**

1. An apparatus for punching the flanges of an elongated structural I-beam having its web horizontally disposed and being arranged for movement lengthwise in a horizontal travel path, comprising:

means defining a punching station including a main frame having side wall surfaces normal to the travel path and having a top and a bottom edge surface,

said frame extending transversely of the travel path and having a transverse aperture characterized by an intermediate throat portion partially describing and surrounding an intermediate portion of an I-beam workpiece,

said frame having a through slot extending between its top and bottom edge surfaces and between its side wall surfaces in intersecting relation with respect to one end portion of the transverse aperture and an adjacent portion of the aperture throat;

first and second punch head means slidably supported by said frame within the through slot for vertical movement toward and away from each other in a plane normal to the travel path,

said first and second punch head means comprising,

a U-shaped punch head body with the legs defining the respective U-shape projecting toward each other on opposite sides of the horizontal plane of the I-beam web and being respectively disposed on opposite sides of the I-beam flange to be punched,

one leg of each U-shaped punch head being slidably supported, against movement in the same plane in a direction away from the other leg of the respective U-shape, by that portion of the through slot intersecting the aperture throat forming portion of said frame, and a gauge rod adjustably connected to and movable with each said punch head body;

punch assembly means including a punch die supported by the end portion of the leg of each said first and second punch head means disposed adjacent the web of an I-beam workpiece,

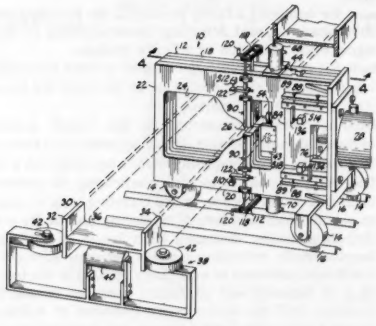
one end of said gauge rod projecting toward the adjacent surface of an I-beam web disposed in the travel path for disposing the respective punch die a predetermined distance from a plane defining the web center of an I-beam workpiece,

said frame having a transverse slot in one end intersecting the through slot;

pressure head means slidably supported by said frame within the transverse slot for horizontal movement in a direction transverse to the travel path toward and away from said punch head means;

means for vertically moving said first and second punch head means toward and away from each other; and,

means for horizontally moving said pressure head means.



3,892,155

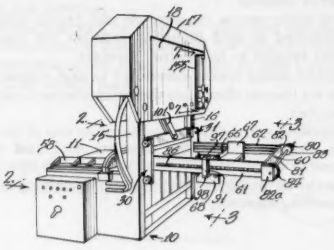
ADJUSTABLE METAL SHEARING MACHINE

Hans W. Gerlach, Greenfield, Wis., assignor to Summit Metal Fabricating, Inc., Cudahy, Wis.

Division of Ser. No. 410,801, Oct. 29, 1973. This application Sept. 18, 1974, Ser. No. 507,133

Int. Cl. B23d *15/08*

U.S. Cl. 83—460 **3 Claims**



1. A metal working machine having a base with a table, a pair of spaced-apart columns on the base extending vertically above and below said table, a fixed shear blade extcnding along an edge of said table, a ram carrying an upper shear blade for coaction with said fixed shear blade, means mounting said ram for vertical movement including a pair of carriages one at each end thereof and a plurality of rollers on each of said carriages and engageable with an adjacent column, and means for adjusting the position of certain rollers on a carriage relative to the last-mentioned carriages to horizontally adjust the clearance between said blades.

3,892,156

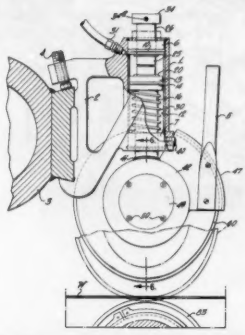
KNIFE HOLDERS FOR SLITTER WINDING MACHINES AND THE LIKE

Bruce V. Johnstone, Gap, Pa., assignor to Johnstone Engineering & Machine Company, Parkesburg, Pa.

Filed Feb. 11, 1974, Ser. No. 441,207

Int. Cl.[2] B23D *19/00;* **B26D** *1/14*

U.S. Cl. 83—469 **21 Claims**



1. A pressure fluid actuated knife holder comprising a cylinder, a piston rod extending axially through said cylinder beyond the ends thereof and having a pressure fluid passage extending coaxially therein, a piston in the cylinder secured on said piston rod, intercooperating means on the piston rod and the cylinder operable to determine retracted and projected limit positions of travel of the piston and rod axially in said cylinder, a knife head on one end of said piston rod for movement therewith between retracted and projected positions, knife support means in said knife head axially shiftable therein between inner and outer positions along an axis perpendicular

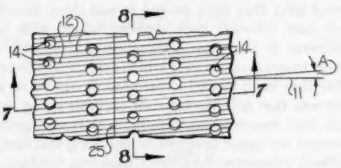
to the axis of the cylinder, pressure fluid actuatable means in the knife head operable to shift said knife support means from said inner position to an outer position, means in said knife head defining a pressure fluid passage communicating between the coaxial pressure fluid passage in said piston rod and said pressure fluid actuatable means in the knife head, means to admit pressure fluid to the cylinder to actuate said piston from said retracted position to said projected limit position, means in the piston rod adjacent the other end thereof defining a pressure fluid inlet passage therein having an inner opening communicating with the coaxial pressure fluid passage in said piston rod and an outer opening for communication with the cylinder interior, the outer opening of said pressure fluid inlet passage being disposed axially in the piston rod so that said outer opening is normally closed by the cylinder in the intermediate and retracted positions of the piston rod and is open and in communication with the cylinder interior only in the projected limit position, and means in the piston rod defining a vent passage having an inner opening communicating with said coaxial fluid passage therein and an outer opening for communication with the external atmosphere, said vent passage being disposed axially in said piston rod and spaced with respect to the pressure fluid inlet opening therein so that the vent outer opening is closed by the cylinder in the projected limit position of the piston rod and is open to the atmosphere in the intermediate and retracted limit positions of said piston rod, whereby pressure fluid can flow from said cylinder to the knife head to axially shift the knife support from said inner position only in the projected limit position of the piston rod and the knife head is vented to atmosphere in said intermediate and retracted positions of the piston rod.

3,892,157

SLITTING ROLL

Grover C. Currie, 901 Ridgecrest Dr., N.E., Lenoir, N.C. 28645, and Brendan L. Doll, Box 8, Patterson, N.C. 28661

Division of Ser. No. 343,677, March 22, 1973, Pat. No. 3,823,623. This application July 15, 1974, Ser. No. 488,437
Int. Cl. B26d *1/32*; B26f *1/20*
U.S. Cl. 83—672 **7 Claims**



1. A slitting roll suitable for slitting an advancing sheet of elongate flexible foam material or the like to form a pattern of spaced apart laterally directed rows of spaced incisions in the web and with the incisions in adjacent rows being in staggered relationship, said roll comprising

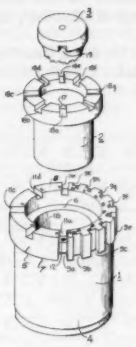
a cylindrical peripheral surface defining a central axis and including a plurality of adjacent ribs formed therein, said ribs having an inverted V-shaped profile and being curved along a helix such that at least three ribs are adapted to simultaneously contact a mating anvil roll or the like, and a plurality of equally spaced, radial apertures extending along the length of each rib and with the adjacent apertures of adjacent ribs being in staggered relationship to define a plurality of rows of spaced cutting blades and with the blades of adjacent rows being in staggered relationship.

3,892,158

ANGULARLY ADJUSTABLE PUNCH ADAPTOR

Gerard Gaston Frans Smeets, Peterborough, Canada, assignor to Producto Machine Company, Bridgeport, Conn.

Filed June 3, 1974, Ser. No. 475,861
Claims priority, application Canada, Oct. 29, 1973, 184521
Int. Cl. B26f *1/14*
U.S. Cl. 83—699 **8 Claims**



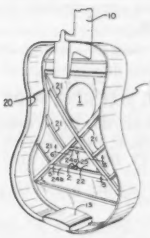
1. An angularly adjustable adaptor for a punch member comprising a first cylindrical member mountable in a supporting surface of a punch press and provided with plurality of circumferentially spaced slots substantially parallel to the axis of the cylinder, the slots are individually selectable to cooperate with a key member to fix the position of the first member with respect to the supporting surface, a plurality of radial slots are provided on one end surface of the first member, a second cylindrical member is mounted within the first member, the second member having an end surface provided with a plurality of radial slots at least individually alignable and keyable with respect to each end slot of the first member, the second member, being adapted to hold therein an active punch member in a predetermined angular position with respect to the second member.

3,892,159

SOUNDBOARD-BRIDGE CONFIGURATION FOR ACOUSTIC GUITARS

Adrianus J. M. Houtsma, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 5, 1974, Ser. No. 494,662
Int. Cl. G10d *3/04*
U.S. Cl. 84—307 **4 Claims**



1. A stringed musical instrument of the lute type having a hollow body consisting of a top, a back and sides, a neck, strings tuned to increasing pitches from low on one side to high on the other side running generally parallel to said neck and terminating on a bridge attached to the top, the improvement comprising said bridge being also flexibly attached to a

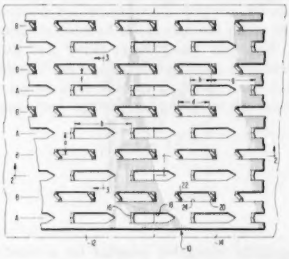
structure of at least one brace extending between said sides, neck or tailblock, said brace structure being separate from said top leaving a space between said brace structure and said top over the entire, or nearly entire, surface area of said top.

3,892,160

CONNECTOR PLATE

John Calvin Jureit, 8901 Arvida Ln., Coral Gables, Fla. 33156, and Benjamin H. Kushner, 12575 N. Miami Ave., Miami, Fla. 33168

Filed Apr. 19, 1974, Ser. No. 462,442
Int. Cl. F16b *15/00*
U.S. Cl. 85—13 **7 Claims**



1. A connector plate for joining wooden members one to the other comprising:

an elongated sheet metal plate, a plurality of elongated nail-like teeth struck from said plate to project to one side thereof, said teeth being struck in longitudinally extending generally parallel rows, the teeth in alternate rows being struck such that the slots left thereby extend from the teeth in like longitudinal directions, the teeth in the rows between said alternate rows being struck to form a plurality of longitudinally spaced sets of two teeth each, the teeth in each set being struck such that a continuous slot is left in said plate between said teeth with the portions of the slot left by each tooth extending therefrom toward the opposite tooth, successive teeth in said alternate rows thereof being spaced longitudinally one from the other and relative to said sets of teeth in next adjacent rows such that each successive tooth lies substantially medially between the pair of teeth forming a set thereof in a next laterally adjacent row of teeth whereby the number of teeth in each said alternate row is substantially one-half the number of teeth in each said next adjacent row, the teeth in said alternate rows thereof being longer in length than the teeth in the next adjacent rows with the latter teeth being approximately 0.5 to 0.7 the length of the former teeth.

3,892,161

BRAIDING MACHINE WIRE CONTROL

Vincent Sokol, 93 Sunnyside Dr., Yonkers, N.Y. 10705

Filed June 6, 1974, Ser. No. 476,798
Int. Cl. D04c *3/12, 3/40, 3/24*
U.S. Cl. 87—29 **15 Claims**

1. A machine for braiding wire, filaments or the like, comprising:

a central core at a central axis on which said core the wire is braided;

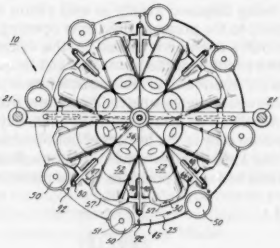
a first array of first bobbins, each for carrying wire to be braided; first moving means for supporting and for moving said first bobbins annularly around said axis in a first direction;

a second array of second bobbins each for carrying wire to be braided; a respective wire guide means for each said second bobbin; the wire from each said second bobbin being guided by its said wire guide means; second moving means for supporting and for moving said guide means annularly around said axis in a second direction opposite said first direction;

cam means for shifting all said guide means radially of said axis; said cam means being mounted to and being rotatable with said first bobbins;

cam follower means on at least some of said guide means, said cam follower means being in engagement with said cam means for being shifted by said cam means; each said cam follower means being so connected with its said guide means that shifting of said cam follower means in a third direction shifts said guide means radially inwardly of said axis and shifting of said cam follower means in a fourth direction opposite said third direction shifts said guide means radially outwardly of said axis;

said cam means being shaped so as to cause each said cam follower means to cause its said guide means to shift radially inwardly of all said first bobbins, thereby enabling



said guide means to pass by said first bobbins radially inwardly thereof and to cause each said guide means to shift radially outwardly of all said first bobbins, thereby enabling said guide means to pass by said first bobbins radially outwardly thereof;

said cam means comprising at least one cam follower guide pathway having first cam follower shift sections which shift said cam followers in said third direction, first cam follower travel sections over which said cam followers travel after they have moved in said third direction, second cam follower shift sections which shift said cam followers in said fourth direction and second cam follower travel sections over which said cam followers travel after they have moved in said fourth direction; said cam follower first and second shift sections being located on said cam means so as to radially shift said guide means through the space between neighboring said first bobbins without engagement between said first bobbins and said guide means.

3,892,162

ROTATABLE STRUCTURES SUPPORT METHOD AND MEANS

Carroll D. Phillips, Weston, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 1, 1973, Ser. No. 412,371
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.815 **2 Claims**

1. A system for independently and rotatably suspending two spaced missile launch assemblies comprising:

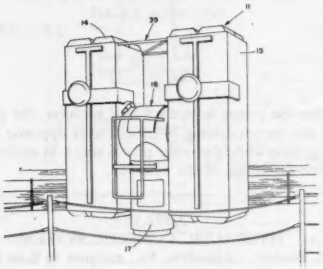
a central structural cylindrical housing disposed between said assemblies with the longitudinal axis of said housing collinear with common transverse axes of said assemblies; a circumferential flange secured to each end of said housing adjacent each assembly for providing cantilevered, rotatable support of said assemblies thereon;

a motor in said housing for driving at least one of said assemblies about its said common transverse axis,

said one assembly driven internally with respect to said housing so that said motor may be coupled directly to said means for providing support of said assemblies,

said housing providing internal space for cables and electronic components and other equipment associated with the control of said motor and said assemblies;

means external to said housing coupling the other of said assemblies to said driven assembly so that both assemblies will rotate in unison; and



a pedestal supporting said housing and means in said pedestal connected to said housing for rotating said housing about an axis orthogonal with respect to said collinear axis,

whereby assemblies such as twin missile launch guide assemblies may be substantially powered and controlled by internally contained equipment to provide azimuth and elevation control of said assemblies and launch control of the missiles in said assemblies.

3,892,163

LIGHT MORTAR FOR FIN-STABILIZED PROJECTILES

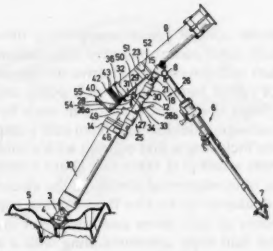
Niilo Klaervo Asikainen, Tampere, Finland, assignor to Oy Tampelle AB, Tampere, Finland

Filed July 26, 1973, Ser. No. 382,940

Claims priority, application Germany, Aug. 4, 1972, 2238345

Int. Cl. F41f *1/06*

U.S. Cl. 89—37 C **10 Claims**



1. A light mortar for projectiles comprising a mortar barrel defined by upper and lower tubes of generally equal length, said upper and lower tubes having upper and lower ends, a base plate at the lower end of said lower tube, rigid support means connected to the upper end of said lower tube and projecting therebeyond, at least a single supporting leg, first means pivotally mounting said leg to said rigid support means whereby the inclination of said lower tube can be selectively varied dependent upon the angle included between said lower tube and said supporting leg, second means pivotally mounting said upper tube between its upper and lower ends to said rigid support means for pivoting movement about an axis transverse to the axis of said mortar barrel thereby providing relative pivotal movement between said upper and lower tubes, said second pivot means being located between said first pivot means and the upper end of said lower tube, linkage means connected to said rigid support means between said second pivot means and said lower tube upper end, said linkage means being farther connected to said upper tube lower end for moving the upper tube into and out of coaxial relationship with said lower tube, and means at the upper tube lower end for preventing a projectile inserted therein from falling by gravity into said lower tube when said upper and lower tubes are not coaxially aligned and until such time as said upper and lower tubes are in coaxial relationship.

3,892,164

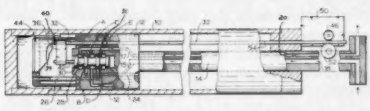
SERVO CONTROL FOR MACHINE TOOLS

Lincoln Stoddard Magor, Cambridge, Canada, assignor to Mimik Limited, Cambridge, Canada

Filed Dec. 19, 1973, Ser. No. 426,205

Int. Cl.[2] F15B *9/10*

U.S. Cl. 91—378 **6 Claims**



1. A servo-mechanism for control of the position of a piston relative to a cylinder, in a machine tool control system,

a piston rod, designed to be connected to said piston and constructed to extend out of one end of said cylinder,

means designed to provide hydraulic fluid supply and return conduits through bores in said piston range

and extending from locations located to be on the exterior of said cylinder, (throughout the ange of movement of said piston rod) to said piston,

said piston being designed and constructed to mount a servo valve comprising two members, relatively movable with respect to each other,

said two relatively movable members and the fluid conduits in said piston being designed so that: said relatively movable members, at one relative position, direct pressure and return fluid so that said piston is moved in one direction; and so that relatively movable members at another relative position direct pressure and return fluid so that said piston is moved in the opposite direction and defining a position intermediate said relative positions,

one of said relatively movable members being arranged to be connected to be movable with said piston,

the other of said relatively movable members being arranged to be connected to be movable with a control rod, said control rod being mounted on said cylinder and also movable in measured increments relative thereto, and arranged to extend longitudinally outside of and substantially parallel to said piston rod and to extend from the vicinity of said piston through an end of said cylinder,

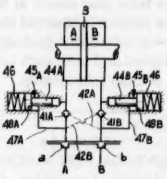
said piston and said relatively movable members being designed so that movement of said control rod relative to said piston in one direction causes flow of oil from and to said supply and return lines, respectively, in a direction which will move said piston relative to said cylinder in a direction to place said relatively movable members in said intermediate position,

wherein said control rod is arranged to extend out of the same end of said cylinder of said piston rod.

3,892,165
ROTARY HYDRAULIC JACK DEVICE

Jean Lioux, Rueil-Malmaison, France, assignor to La Precision Industrielle, Hauts de Seine, France

Filed Apr. 6, 1973, Ser. No. 348,598
Claims priority, application Italy, Apr. 11, 1972, 12621/72
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—420 **2 Claims**



1. A hydraulic jack device comprising

a rotary cylinder,

a piston in said cylinder parting the same into two compartments,

conduit means including rotary joint means for connecting each of said compartments to a source of liquid under pressure, said conduit means including, between said rotary joint means and each compartment, a liquid flow-path provided with a pressure responsive nonreturn valve, pressure operated piston means for forcibly opening a respective non-return valve in one flow path responsive to pressure in the other flow path,

first duct means connecting said piston means with each flow path upstream of said non-return valves,

associated with each flow-path, means defining a stepped cylindrical cavity comprising a first portion of small diameter and a second portion of large diameter forming an extension of said first portion,

second duct means connecting the end of said first portion remote from said second portion with the associated flow-path downstream of the corresponding said non-return valve,

a differential piston in said cavity having two sections secured to one another and respectively cooperating with both cavity portions,

a spring in said second portion urging said piston toward said first portion,

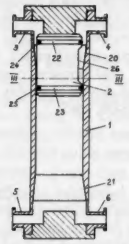
third duct means connecting the annular space comprised between the junction of said portions and the two sections of the differential piston with the associated path upstream of the corresponding non-return valve.

3,892,166
PISTON AND CYLINDER APPARATUS ARRANGED FOR CLEANING

Bjorn-Olow Johansson, Lomma, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed June 12, 1973, Ser. No. 369,303
Claims priority, application Sweden, June 19, 1972, 8043/72
Int. Cl. F15b *11/08, 13/04*
U.S. Cl. 91—454 **7 Claims**

1. Apparatus comprising a cylinder, a piston adapted to reciprocate in the cylinder between two end positions and having an annular seal at each end of the piston, whereby said seals are interposed between interior portions of the cylinder on opposite sides of the piston, the cylinder having at least one opening on each side of the piston, said openings serving as inlet and outlet for liquid, and means for controlling the flow of liquid into and out of the cylinder through said openings, the inside of the cylinder having at each end position of the piston an annular zone in which the internal diameter of the cylinder along a substantial part of its periphery is larger than the outer diameter of said annular seals, said zones communicating with respective cylinder openings and being located so

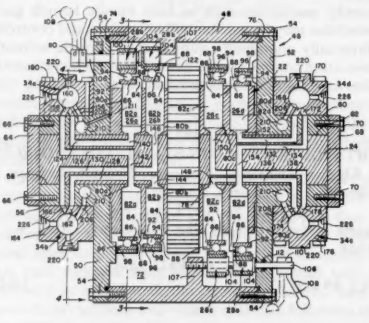


that when the piston is in each end position, the piston seal nearest the corresponding cylinder end is opposite the corresponding zone while the other piston seal is in sealing engagement with the inside of the cylinder.

3,892,167
HYDRAULIC CONTROL SYSTEM

Lester J. Becker, Alexandria, Va., assignor to Kate C. Lainof, Alexandria, Va.

Division of Ser. No. 858,290, Sept. 16, 1969, Pat. No. 3,601,986. This application Mar. 25, 1971, Ser. No. 127,961
Int. Cl. F01b *13/06*
U.S. Cl. 91—497 **2 Claims**



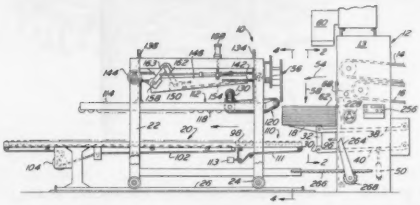
1. A hydraulic control system comprising: drive means; a stationary shaft, rotor means mounted for rotation about said stationary shaft and driven by said drive means and including a plurality of radial pump units, each pump unit having a plurality of radial bores and a piston in each bore; conduit means for conducting fluid to and from said pump units; said conduit means including a first conduit within said shaft communicating with a first port extending about a first substantial portion of the circumferential portion of the circumference of said shaft and adapted to receive fluid from or supply fluid to said radial bores as said bores pass thereover and a second conduit within said shfat communicating with a second port extending about a second substantial portion of the circumference of said shaft and adapted to receive fluid from or supply fluid to said radial bores as said bores pass thereover, and individual control means for each radial pump unit for adjusting the radial stroke of the pistons of each unit, whereby the direction and magnitude of fluid flow in said conduit means from each of said pump units is controlled independently of the direction and magnitude of flow in the remaining pump units and the direction of rotation of said rotor means, said individual control means comprising a ball bearing race having inner and outer rings with bearings positioned therebe-

tween, said inner ring constituting a guide ring which is capable of rotary movement with respect to said outer ring, the outer extremity of said pistons being interengaged with said guide ring, and means for adjusting the eccentricity of said guide ring with respect to the axis of rotation of said rotor means.

3,892,168
COUNTER EJECTOR

William Grobman, Philadelphia, Pa., assignor to Molins Machine Company, Inc., Camden, N.J.

Filed Jan. 14, 1974, Ser. No. 433,328
Int. Cl. B31b *1/98*
U.S. Cl. 93—93 C **19 Claims**

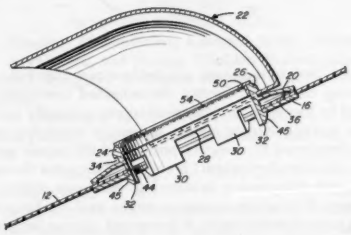


1. Apparatus for accumulating a stack of sheets such as folded boxes comprising an elevator having a surface on which sheets may accumulate to form a stack, a first conveyor means for feeding sheets to said elevator, circuitry including fluid means for sequentially causing the elevator to descend in discrete increments correlated with the number of sheets fed to the elevator, second conveyor means for receiving a stack from said elevator, pusher means for transferring a stack from said elevator to said second conveyor means, a backstop facing said first conveyor means, and means above said elevator to apply a downwards compressive force to a stack while a stack is on the elevator.

3,892,169
READILY INSTALLED VENT FOR FLEXIBLE COVER PANEL

Frank R. Jarnot, 205 Nichols Ave., Huntington, Conn. 06484

Filed Feb. 26, 1974, Ser. No. 446,024
Int. Cl. F24f *7/00*
U.S. Cl. 98—37 **11 Claims**

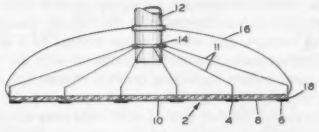


1. A vent for a flexible panel, said vent comprising first and second separable members, said first member defining a central opening and being adapted to abut the inner surface of a panel having a vent opening formed therethrough of a size and shape corresponding to the size and shape of the first mentioned opening and with said openings in registry, said second member defining a central opening and being adapted to abut the outer surface of said panel with said central openings registered, one of said members including a plurality of arms spaced about the central opening thereof and projecting outwardly therefrom and through the central opening in the other member, said arms being stiff but slightly flexible and resilient and including outwardly projecting outer end abutments overlying opposing surfaces of said other member disposed about its central opening and facing away from said one member, at least one of said members including an outwardly projecting stiff but flexible and resilient flange having first outer peripheral surface portions facing toward the other member extending continuously about the central opening thereof, said other member including second surface portions facing toward and opposing said first surface portions and extending continuously about the central opening of said other member, said first and second surface portions being adapted to clampingly engage said panel therebetween with said flange slightly flexed away from said second surface portions, said free ends of said arms being inwardly flexible toward each other sufficient to withdraw said abutments through the central opening of said other member, said first member further including weather protection means projecting outwardly from the side thereof remote from said second member and at least partially overlying the central opening therethrough and including means for inwardly deflecting air flowing across the last-mentioned opening into the latter.

3,892,170
INFLATABLE AIR PLENUM FOR A SUSPENDED CEILING SYSTEM

James E. Hazeley, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Continuation of Ser. No. 189,508, Oct. 15, 1971, abandoned. This application Mar. 15, 1974, Ser. No. 451,342
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 D **1 Claim**

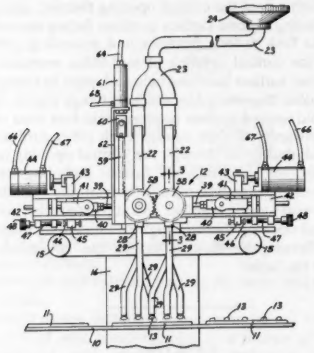


1. In a suspended ceiling system wherein a support network is provided for supporting a plurality of ceiling components which constitute the suspended ceiling system, said ceiling components being able to pass air from the area above the suspended ceiling system to the area below the suspended ceiling system, said suspended ceiling system being supported from the structure of a building, the improvement consisting of an impermeable membrane being placed over the suspended ceiling system, said membrane being sealed to the peripheral edge of the suspended ceiling system to define an air impermeable plenum chamber above the suspended ceiling system whereby air may be provided to the plenum area of a controlled size and then from the plenum area into the area below the suspended ceiling system by passing through the components of the suspended ceiling system, and an air inlet duct means for air and utility services positioned above the ceiling system and passing into the impermeable membrane, said air and utility inlet duct means having fastened thereto the means which supports the suspended ceiling system so as to hold the suspended ceiling in position supported by the inlet duct means alone.

3,892,171
APPARATUS FOR MAKING PIZZAS OR THE LIKE

Clifford E. Fitch, 279 Homewood Ct., and Clifford E. Fitch, Jr., 38 W. 23rd St., both of Chicago Heights, Ill. 60411

Filed Sept. 7, 1973, Ser. No. 395,069
Int. Cl. A21c 9/04; B67d 5/54
U.S. Cl. 99—450.7 16 Claims



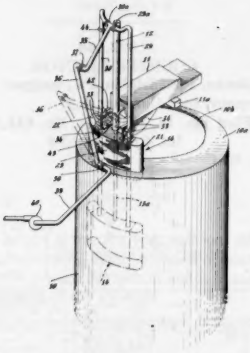
1. An apparatus for metering and distributing meat or the like in a desired pattern onto pizzas or the like including a conveyor for advancing the pizzas, a metering and distributing head for the meat above the advancing pizzas on the conveyor comprising a housing having a supply station and means for feeding meat thereto, a distributing station having distributing tubes for distributing meat in a desired pattern onto the pizzas, a metering station having movable metering pistons for metering the meat portions to be distributed to the pizzas, an air supply station having means for supplying air under pressure, a movable core in the housing which, when moved to a first position, communicates the air supply station with the distributing station and communicates the supply station with the metering station, and which, when moved to a second position, communicates the metering station with the distributing station, and means including control means for moving the core and the metering pistons and operating the air supply means in timed relation so that when said core is in its said first position, metered portions of the meat are distributed by air pressure from the distributing station to the pizzas and the metering pistons are retracted to receive meat in the metering station from the supply station, and so that when said core is in its said second position, the metering pistons are advanced to project metered portions of the meat from the metering station to the distributing station.

3,892,172
APPARATUS FOR MAKING CHEESE AND THE LIKE

Reynold M. Hakala, St. Paul, Minn., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Filed Apr. 3, 1973, Ser. No. 347,421
Int. Cl. A01j 25/11
U.S. Cl. 99—458 7 Claims

1. The combination of a tank for holding a mass of cheese curds and whey, a strainer box having a whey-collecting chamber with a perforated wall adapted for straining of whey from said mass and into the chamber, the strainer box also having float means for supporting the box in a partially submerged operating position in said mass to effect said straining, the box being movable downward to and upward from said operating position, a downwardly extending tube which opens into said whey-collecting chamber and which is secured to said box for up and down movements therewith, a suction duct outside the tank and connected to the upper end of said tube for withdrawing whey from said chamber, a power source for lowering the strainer box to said mass and then allowing the box to descend freely in said operating position in the mass as the level thereof is lowered by said whey withdrawal, and control

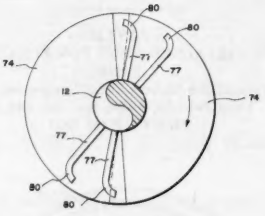


means associated with said power source for operating the same to raise the strainer box in response to said mass reaching a low level in the tank.

3,892,173
HORIZONTAL SCREW PRESS

Howard W. Hall, and William A. Avilla, both of Santa Rosa, Calif., assignors to Rietz Manufacturing Co., Santa Rosa, Calif.

Filed Oct. 15, 1973, Ser. No. 406,475
Int. Cl. B30b 9/12, 15/00, 3/02
U.S. Cl. 100—117 7 Claims



1. In a dewatering press, rotatable screw conveyor means consisting of a shaft having disconnected conveyor flights secured to the same, a cylindrical screen assembly surrounding the screw conveyor means, means for supplying material to be dewatered to one end portion of the screw conveyor means whereby the material is caused to progress through the screen with progressive dewatering, discharge means at the other end of the screw conveyor means, said discharge means serving to permit discharge of dewatered cake under pressure, stationary interrupter bars having portions extending into the screen assembly and disposed between interrupted flights, each of the interrupted flights having a trailing edge and a face serving to act upon material to urge the same toward the discharge means, and material engaging means fixed to said face of at least one of the interrupted flights, said means forming a shoulder protruding from said flight face and faced in the direction of rotation and extending in a general radial direction from the inner portion of said one flight to a region near the outer perimeter of the same, said means serving to act upon the material in conjunction with interruptor bar portions express water from the material.

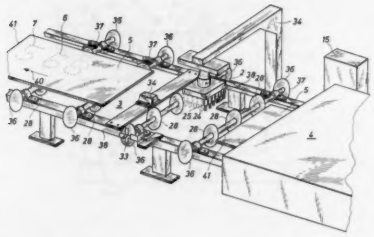
3,892,174
ELECTRICALLY CONTROLLED APPARATUS FOR MARKING OBJECTS

Jorgen Marcher, Snogegardsvej, Denmark, assignor to H. Nielsen & Son Maskinfabrik A/S, Herlev, Denmark

Continuation-in-part of Ser. No. 118,901, Feb. 15, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 313,723

Int. Cl. B41f *17/00*

U.S. Cl. 101—35 **5 Claims**



1. In a electrically controlled apparatus for marking an object travelling at a speed which may vary along a conveyer, having a selectively operable marking mechanism for marking the object with a code consisting of selected characters such as letters and/or figures, code selection means connected to a storage register through read-in means for storing code characters selected by said selection means and read-out means for reading out the stored characters from said storage register and for supplying to the marking mechanism actuating signals corresponding to said characters, first sensing means for sensing the presence of said object along said conveyer, second sensing means for sensing the speed of travel of said object along said conveyer, and control means connected to said first and second sensing means and to said storage register, said control means being responsive to the presence of said object along said conveyer as detected by said first sensing means for causing said actuating signals to begin to read out from said storage register, said control means further including means for controlling the rate of read-out of said actuating signals in accordance with the variable speed of travel of the object along the conveyer as sensed by second sensing means so that said characters are marked on said object at a rate dependent on the rate of travel of said object.

3,892,175
PRINTING NEEDLE DRIVE

Armin Heindke, Pfaffenweiler; Gerhard Mutz; Albert Hirt, both of Villingen, and Werner Winkler, Furtwangen, all of Germany, assignors to Kienzle Apparte GmbH, Villingen, Germany

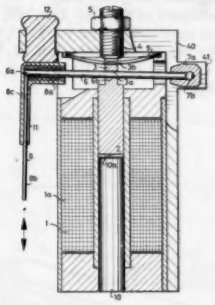
Filed June 14, 1973, Ser. No. 370,059

Claims priority, application Germany, June 23, 1972, 2230810

Int. Cl. B41j *3/10;* **H01f** *7/08*

U.S. Cl. 101—93.05 **13 Claims**

1. Printing needle drive comprising supporting means; elongated lever means having a fulcrum mounted on said supporting means and being formed over the whole length thereof from resilient material; printing needle means secured to a first portion of said lever means and projecting therefrom transversely to said lever means; and electromagnetic means including a movable armature connected with a second portion of said lever means spaced from said fulcrum a smaller distance than said first portion so that when said armature is moved in an armature stroke of predetermined length, said needle means is moved in a needle stroke of proportionally greater length, and at a higher speed than said armature, the mass of said needle means having a predetermined magnitude to prevent movement of said first portion of said lever means during the first part of said armature stroke whereby said resilient lever means is resiliently deformed and tensioned so



that said resilient lever means recoils during the second part of said armature stroke and accelerates said needle means faster than said armature is accelerated when said electromagnet means is energized.

3,892,176
ROTARY SCREEN TENSIONER FOR SINGLE SIDED DRIVE

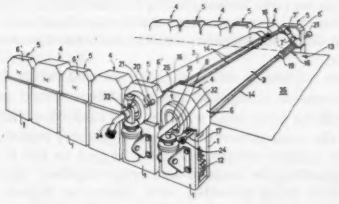
Johannes Bernardus Van der Winden, Amstelveen, Netherlands, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 108,394, Jan. 21, 1971, abandoned, which is a continuation of Ser. No. 608,438, Jan. 10, 1967, abandoned. This application Sept. 5, 1973, Ser. No. 394,645

Claims priority, application Netherlands, Feb. 4, 1966, 6601488

Int. Cl.[2] B41F *15/38*

U.S. Cl. 101—116 **16 Claims**

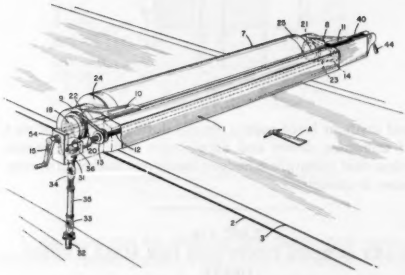


15. In a rotating screen printing machine comprising a frame, means on said frame for supporting a web to be printed while advancing from one end of the machine to the other, a cylindrical seamless perforated screen of a thin flexible material extending transversely of the direction of travel of the web, relatively rigid hollow sleeves connected to opposite ends of said screen, a pair of spaced aligned bearing assemblies on said frame supporting said sleeves and said screen for rotation so that the screen bears in continuous printing relation upon the web during printing, means for positively and rotatably driving one of said sleeves at only one end of said screen while the sleeve at the opposite end of the screen is freely rotatably supported, and means for maintaining said screen under tension axially thereof while being driven whereby the sleeve at the said opposite end of the screen is rotated by a positive driving torque transmitted through the screen.

3,892,177
ADJUSTABLE ROTARY SCREEN SUPPORT WITH TELESCOPING DRIVE

Adolfo Giani, Bergamo, Italy, assignor to Reggiani, S.p.A., Quartiere Reggiani, Bergamo, Italy

Continuation-in-part of Ser. No. 218,749, Jan. 18, 1972, abandoned. This application Sept. 12, 1973, Ser. No. 396,557
Claims priority, application Italy, Jan. 21, 1971, 19591/71
Int. Cl. B41l *13/16*; B41f *15/10*, *15/38*
U.S. Cl. 101—116 10 Claims



1. Apparatus for supporting and driving cylindrical screens of a printing machine for fabrics and ribbon-like materials, in which the material to be printed is carried by an endless belt over a printing table, comprising:

a frame;

a cross member mounted on said frame;

a pair of printing screen support heads mounted on said cross member for supporting a cylindrical printing screen mounted therebetween, the longitudinal axis of the screen extending substantially parallel to the cross member;

means adjustably mounting one of said heads for axial movement along said cross member toward and away from the other head which is held stationary with respect to the axial movement of said adjustably mounted head; end support means, rotatably hinged to the frame, for supporting the ends of said cross member, said support means being provided with means to permit slidably displacing said cross member in a direction substantially normal to the plane of said belt;

ball joint supporting means, recessed in said supporting heads, for supporting and aligning the opposite ends of said printing screen during rotation thereof;

first transmission means for rotatably driving said printing screen, including a horizontal shaft supported by the cross member, two pinion gears mounted on said shaft, and two sprockets mounted one on each end of said screen, said pinion gears and sprockets being coupled for rotation through respective transmission belts;

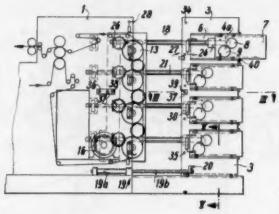
second transmission means for driving said first transmission means, and including a double universal joint interconnected by a telescopic shaft, one joint being coupled to said first transmission means and the other to a source of motive power; and

tensioning means coupled between the stationary supporting head and said frame for applying tension to said printing screen.

3,892,178
ROTARY PRINTING MACHINE

Otto Staamann, Berlin, Germany, assignor to Firma Automatic Druckmaschinenfabrik, Germany

Filed June 25, 1973, Ser. No. 373,039
Claims priority, application Germany, July 8, 1972, 2234089
Int. Cl. B41f *5/16*, *13/26*
U.S. Cl. 101—177 6 Claims



1. In an offset rotary printing machine, for printing a continuous web, including a bed frame and a main frame, and having printing units, each including a plate cylinder, a blanket cylinder and an inking mechanism, with the printing units being arranged one above the other in a printing unit support stand and respective impression cylinders associated with the blanket cylinders and mounted one above the other in the main frame of the machine, each at the level of the associated blanket cylinder, and with the printing units and the impression cylinders all driven from a main drive: the improvement comprising, in combination, guide rails mounting said stand on said bed frame for shifting, with said printing units, away from said impression cylinders to provide a man-size space between said printing units and said impression cylinders for ready access of an operator thereto; means operable to shift said stand along said guides; a respective drive shaft connecting each printing unit to the associated impression cylinder, each drive shaft being splined and mounted on the associated printing unit against axial displacement relative thereto; a respective single tooth clutch drivingly connecting each drive shaft to the associated printing unit; each splined drive shaft being slidably engaged through a respective splined gear member mounted on said main frame and driven by said main drive; each printing unit being displaceable, on said support stand, to an inoperative position; and respective back stops limiting displacement of each printing unit on said support stand; each drive shaft, when said support stand is shifted to provide such man-size space and the associated printing unit is further displaced into engagement with the respective back stop, remaining drivingly connected to the associated splined gear member on said main frame.

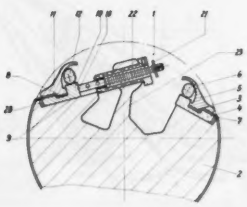
3,892,179
QUICK-ACTION CLAMPING DEVICE USED IN ROTARY CYLINDERS OF PRINTING MACHINES

Hans-Georg Jahn, Wiesloch, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Apr. 18, 1973, Ser. No. 352,196
Claims priority, application Germany, Apr. 21, 1972, 2219546
Int. Cl. B41f *27/12*
U.S. Cl. 101—415.1 2 Claims

1. In a quick-action clamping device for use in rotary cylinders of printing machines for clamping flexible printing plates comprising a stationary and a secant displaceable clamping bar assembly disposed in a channel in the plate cylinder, said displaceable clamping bar assembly being adapted to be selectively held in a first position which applies tension to the pressure plate and in a second position which does not apply

tension to the pressure plate; at least two guide rods affixed to the back side of the displaceable clamping bar assembly, said guide rods being constantly under spring tension in clamping direction of the plate, a latch pivotably mounted on an axis extending perpendicularly to the axis of rotation of said cylinder, a clamping rib provided in the channel of the plate cylinder, at least one clamping screw affixed to the back of the displaceable clamping bar assembly and extending parallel to



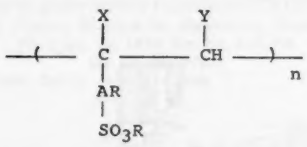
said guide rods, said clamping screw extending through a bore of said clamping rib, said clamping screw having a clamping nut on its free end, bushings threadedly engaged in said clamping rib, said guide rods being guided in said bushings, springs disposed in said bushings, said bushings having a bottom portion against which said springs are biased, said bushing being threadedly adjustable in said clamping rib in a direction for applying tension to said plate.

3,892,180
LIGHT ACTIVATING IMAGING PROCESS

Alan R. Monahan, East Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 245,276, April 18, 1972, Pat. No. 3,834,906. This application May 29, 1974, Ser. No. 474,271
Int. Cl. G03f *7/02*
U.S. Cl. 101—456 **8 Claims**

1. A printing member comprising a support substrate having fixed to the surface thereof in imagewise configuration photoinsoluble alkyl esters of polyvinylaryl sulfonic acids, said esters satisfying the formula:



wherein R may be any straight or branced chain alkyl group including halogen substituted groups up to and including ten carbon atoms;

wherein n is an integer having a value of from 10 to infinity; X and/or Y are hydrogen, halogen, alkyl or halogen substituted alkyl groups;

wherein Ar may be any polynuclear aromatic fused ring hydrocarbon up to an including 5 benzene rings.

3. A method of printing from a contact printing member which comprises:

a. coating the surface of a support substrate with alkyl esters of polyvinylaryl sulfonic acids;

b. selectively exposing said composition to actinic radiation;

c. developing said exposed polymer by dissolving away the unexposed portions of said polymer;

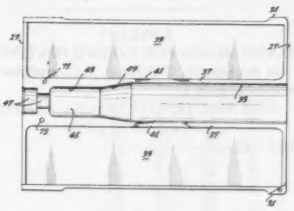
d. applying to the imaged surface of said member a printing ink; and

e. contacting said inked image with a receiver sheet.

3,892,181
FLAT TELESCOPED CARTRIDGE CASING

Morris Goldin, Orange, Calif., assignor to Summa Corporation, Culver City, Calif.

Filed Mar. 26, 1973, Ser. No. 344,842
Int. Cl. F42b *5/26*
U.S. Cl. 102—40 **4 Claims**



1. A cartridge casing comprising

a projectile guide tube therein having

means for seating a projectile in a fully telescoped relationship with said casing,

booster charge receiving means in axial alignment with said projectile guide tube,

primer receiving means in axial alignment with said booster charge receiving means,

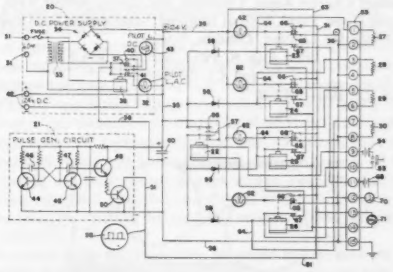
means, laterally offset from the axis of said projectile guide tube, for receiving a main propellant charge, and

window means, normally completely obturated by a projectile fully seated in said guide tube and located at a position removed from each end of said propellant charge receiving means, providing communication between said guide tube and said main propellant charge receiving means so that combustion of a propellant charge in said propellant charge receiving means commences in two different directions only after projectile movement has occured sufficiently to uncover said window means.

3,892,182
SQUIB CONTROL CIRCUIT

George Salvador Covarrubias, La Puente, and Ernest Charles Slater, La Verne, both of Calif., assignors to CBF Systems Inc., Covina, Calif.

Filed Dec. 10, 1973, Ser. No. 423,082
Int. Cl. F42c *15/40*
U.S. Cl. 102—70.2 R **11 Claims**



1. A squib control and indicating means for indicating the condition of a squib filament by means of an indicating lamp before and after firing comprising:

a. a source of direct current power;

b. a source of pulsating current;

c. a lamp relay including a winding connected in series between the source of direct current and the squib fila-

ment for activating the relay, said relay also including a pair of contacts connected in series between the source of direct current and the indicating lamp for lighting the lamp whenever the relay is actuated;

d. means for firing the squib filament; and

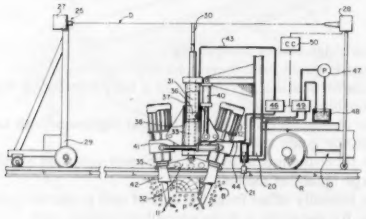
e. means for indicating when the squib filament has been fired, including a pair of relay contacts on said lamp relay connected between the lamp and said source of pulsating current.

3,892,183

METHOD AND MEANS FOR CONSOLIDATING BALLAST

Helmuth von Beckmann, Columbia, S.C., assignor to Canron, Inc., Phillipsburg, N.J.

Filed Mar. 18, 1974, Ser. No. 452,371
Int. Cl. E01b *27/00*
U.S. Cl. 104—12 **10 Claims**



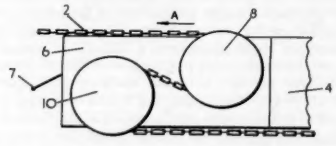
3. Apparatus for lifting a rail of railroad track and tamping ballast therebeneath comprising a track surface reference system to provide a track surface datum; track travelling frame means; track jacking means on said frame; rail-engaging stop means in continuous engagement with the rail and floatingly mounted on said frame means for free up and down movement thereon; reference system detecting means connected to said stop means; means responsive to the detection of said datum by said detecting means to generate a signal to terminate a track jacking operation of said jacking means and simultaneously to lock said stop means relative to said frame means; and ballast tamping means mounted on said frame means to tamp the ballast beneath the rail against the reaction of said locked stop means.

3,892,184

DRIVE ARRANGEMENTS FOR MINING MACHINES

Robert Charles Kenn, Lichfield, and David Arthur Tate, Burton Upon Trent, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Aug. 8, 1973, Ser. No. 386,648
Int. Cl. B61b *13/00*
U.S. Cl. 104—147 R **11 Claims**



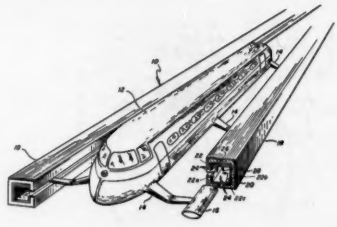
1. A drive arrangement for a machine adapted to haul itself to and fro along a haulage chain extending along a machine's path, comprising a machine, a plurality of sprockets mounted on the machine and arranged for engagement with the chain, and drive means connected to the sprockets and adapted to drive at least a currently leading sprocket irrespective of direction of travel of the machine along the chain.

3,892,185

LOW DRAG MAGNETIC SUSPENSION SYSTEM

Charles A. Guderjahn, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 97,232, Dec. 11, 1970, Pat. No. 3,717,103.
This application Apr. 24, 1972, Ser. No. 247,195
Int. Cl. B61d *13/08*
U.S. Cl. 104—148 LM **5 Claims**



1. An improved composite guide-way for providing lift forces to bodies, which bodies have attached thereto at least one magnet which is adapted to move in a predetermined path along the course of said guide-way comprising:

a. a first layer containing nonferromagnetic conductor material, said layer being disposed above said predetermined path;

b. a second layer containing ferromagnetic material, said layer being positioned intermediate said first layer and said predetermined path, and

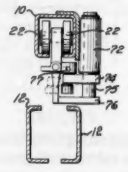
c. supporting means to rigidly support said first and second layers, said supporting means being so arranged as to allow maximum flow of magnetically induced current in said first layer.

3,892,186

FREE AND POWER CONVEYOR SYSTEM

George R. Pipes, South Euclid; James D. Peppers, Wickliffe, and Wayne T. Mormile, Mayfield Heights, all of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 241,116, April 5, 1972, Pat. No. 3,795,200. This application Aug. 8, 1973, Ser. No. 386,667
Int. Cl. B61b *13/12*
U.S. Cl. 104—249 **6 Claims**

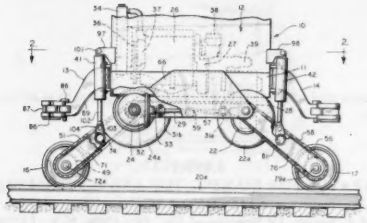


1. A conveyor system of the type having an endless power chain supporting a plurality of spaced apart front and rear pusher assemblies and carriers supported by front and rear trolleys for movement along a track adjacent the power chain, said rear pusher assemblies being supported from said power chain independently of said front pusher assemblies and spaced apart therefrom with said carriers normally being towed by engagement of a front pusher assembly with the front trolley, the improvement comprising,

qualifier means positionable in the path of travel of said carriers for halting movement of any carrier being propelled by the rear pusher assembly, said qualifier means comprising positive stop means located at one or more

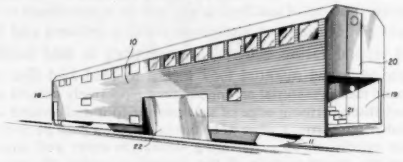
predetermined sections of said track where a rear pusher assembly is engageable with a trolley.

3,892,187
RAIL TRACTION VEHICLE
Eugene B. White, Jr., 406 Indiana St., Park Forest, Ill. 60466
Filed Aug. 9, 1974, Ser. No. 496,259
Int. Cl.[2] B61C *11/00*
U.S. Cl. 105—75 **42 Claims**



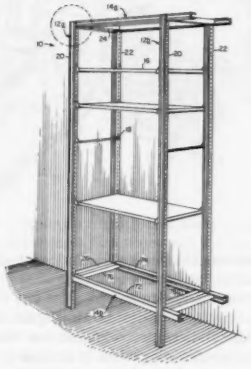
1. A rail traction vehicle of the type adapted for transferring weight from a coupled railway car to the traction vehicle comprising: a main frame having opposed side members, at least two pairs of road wheels mounted on said vehicle in generally rectangular configuration along axes generally transverse to said side members, at least two pairs of flanged rail wheels also mounted on said vehicle in generally rectangular configuration along axes generally parallel to but spaced from said road wheel axes, means for selectively and alternatively supporting said vehicle either wholly on the road wheels or wholly on the rail wheels, a single differential axle on the vehicle generally parallel to the axes of the road and rail wheels, a power train including an engine for driving said single differential axle, and power transmitting means interconnecting the differential axle in driving relationship with said wheels for driving said two pairs of rail wheels and one pair of road wheels, whereby the driven wheels on one side of the traction vehicle are differentially driven with respect to the driven wheels on the opposite side of said vehicle.

3,892,188
AUTO TRANSPORTING PASSENGER TRAIN CAR
George A. Warren, 80 South St., Shrewsbury, Mass. 01545
Filed Jan. 18, 1974, Ser. No. 434,396
Int. Cl. B61d *1/06*
U.S. Cl. 105—368 R **7 Claims**



1. A railroad car adapted to form one of a series of cars for transporting vehicles and passengers in a train, comprising:
a. an elongated bed supported on draft gear,
b. first and second storage levels for a plurality of autos over the bed,
c. a lifting ramp, entirely within the car, the ramp having a first end hingedly connected to the second level, and a first end movable between the first and second level, and
d. a first means for moving the second end of the ramp between the first level and the second level.

3,892,189
MODULAR SHELF CONSTRUCTION
Oliver P. Killam, 269 Pleasant St., Marblehead, Mass. 01945
Filed July 9, 1973, Ser. No. 377,258
Int. Cl. A47b *47/02, 57/16*
U.S. Cl. 108—109 **3 Claims**



1. A bookcase or the like of modular construction, comprising
a. at least a pair of rectangular vertical side frames,
b. at least a pair of rectangular horizontal top and bottom frames rigidly connected at their opposite ends to a pair of said side frames at their upper and lower portions to form a rectangular frame assembly in which the side frames are mounted in spaced parallel relation by said top and bottom frames,
c. shelf support means mounted to said side frames, and,
d. a shelf mounted horizontally on said support means,
e. each of said side frames being fabricated from a plurality of extrusion members each of a U-shaped cross-section and including spaced parallel side walls and a connecting transverse base wall, said side walls being formed with a pair of oppositely facing longitudinal grooves along the free edges thereof and a longitudinal rib formed along the centerline of the inner face of said base wall, said rib being formed with a longitudinal passage therein of C-shaped cross-section to engage screws connecting adjacent members, said rib being further formed with a longitudinal slot opening facing the open side of said extrusion member,
f. a substantially flat facia strip mounted in said grooves,
g. each of said members being formed with a second pair of oppositely facing grooves in the outer face of said base wall,
h. a connecting tongue of a T-shaped cross-section mounted with the head thereof in said second pair of grooves, and,
i. an edge grooved panel mounted within said side frames, the leg of said tongue extending into the grooved edges of said panel.

3,892,190

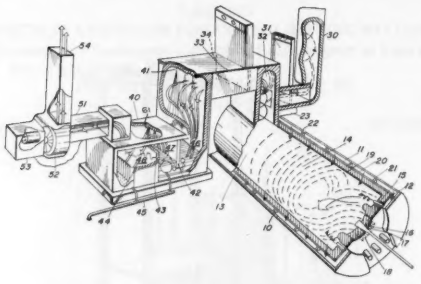
THERMAL OXIDATION OF WASTES AND APPARATUS THEREFOR

Peter S. Sharpe, Joliet, Ill., assignor to Brule' C. E. & E., Inc., Blue Island, Ill.

Continuation-in-part of Ser. No. 289,095, Sept. 14, 1972, Pat. No. 3,805,714. This application Apr. 1, 1974, Ser. No. 457,102

Int. Cl. F23g *3/00*

U.S. Cl. 110—8 R **11 Claims**



1. A process for thermal oxidation of gaseous, liquid and solid chemical wastes comprising:

pre-heating an air stream;

introducing the pre-heated air stream tangentially into a cylindrical oxidation chamber so that the air stream moves as a swirling mass in a spiral and rotating motion to the exhaust end of the oxidation chamber and forms an air layer along the side wall of the oxidation chamber;

introducing fuel into said swirling mass for combustion through the feed end of the oxidation chamber;

igniting the introduced fuel;

introducing chemical waste into said swirling mass through the feed end of the oxidation chamber;

maintaining relative amounts of air, fuel and chemical waste in said swirling mass sufficient to effect oxidation of the introduced waste, combustion of the fuel and to provide air in excess of the amount needed for said oxidation and combustion;

passing the fuel, air and chemical waste through the oxidation chamber in an intimate mixing, spiraling, rotating motion at low pressure to effect high efficiency oxidation of the waste in the central portion of the combustion chamber while maintaining said air layer along the side walls of the oxidation chamber; and

passing the products of oxidation and combustion and excess air from the oxidation chamber through an open exhaust end.

3,892,191

VAPOR GENERATING SYSTEM IN WHICH RECIRCULATED FLUE GASES ARE INJECTED INTO THE COMBUSTION AIR STREAM OF A STEAM GENERATOR

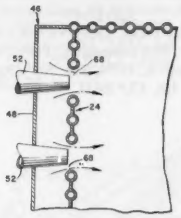
Robert P. Welden, Jr., Westfield, and Walter P. Gorzegno, Florham Park, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed May 13, 1974, Ser. No. 469,261

Int. Cl.[2] F23J *5/02*

U.S. Cl. 110—49 R **12 Claims**

1. A vapor generating system comprising a furnace section, duct means connecting the interior of said furnace section with a source of air, a plurality of mixing pipes disposed in said duct means, and additional duct means for introducing combustion gases from the outlet of said furnace section into said mixing pipes, said mixing pipes having a plurality of slots extending therethrough for discharging said gases into the path of air flowing through said duct means in a direction perpendicular to the direction of the flow of said air to mix



said gases and air before they are introduced into said furnace section.

3,892,192

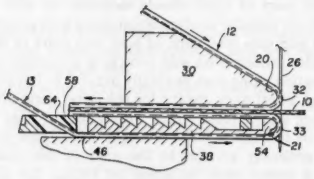
APPARATUS FOR MAKING TOP AND BOTTOM BLIND STITCHED FACING

Ronald J. Boser, 19 Branwood Dr., Dix Hills, N.Y. 11746

Filed Feb. 5, 1973, Ser. No. 329,832

Int. Cl. D05b *35/06*

U.S. Cl. 112—140 **1 Claim**

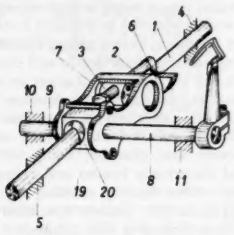


1. In a sewing machine of the needle-feed type adapted to produce blind stitched facing on opposite sides and along an edge of a fabric, a pair of spaced needles operating in unison, a presser-foot and a feed dog arranged in facing relation to each other, and each of said presser-foot and said feed dog having a blind-stitch forming edge lying closely adjacent the path of travel of said needles, a stationery throat plate having an enlarged needle opening therein cooperating with said feed dog, said forming edge on said feed dog extending into and reciprocating within said enlarged opening facilitating movement of a facing material therethrough, at least two folders respectively designed to fold the edges of a first and a second arrangement of facing material to form in each said arrangement a top ply and under ply at each longitudinal edge thereof, a fabric feed means including the feed movement of said needles and of said feed dog in unison to contribute to the feeding of fabric in an interposed position between said first and second facing material arrangements to said needles, separate facing material feed means to feed said first and second facing material arrangements respectively around said blind-stitch forming edge of said presser-foot and around said blind-stitch forming edge of said feed dog in a path permitting each needle on its penetrating stroke, to enter and emerge from the lower surface of the respective under ply without penetrating the top ply of each said first and second facing material arrangements, said facing material arrangement which is fed relative to said feed dog being threaded initially from the rear and then in a reverse direction through said feed dog so as to form a reverse curvature at said feed dog blind-stitch forming edge to thereby facilitate the selective penetration of said needles relative to the plies of said facing material arrangement, whereby both edges of the facing are blind stitched on opposite sides of a fabric fed between said presser-foot and said feed dog and each masks the blind stitching on the side of the fabric to which it is attached.

3,892,193
DRIVING GEAR FOR THE LOOPER OF A CHAIN STITCH SEWING MACHINE

Ernst Lienemann, Kaufungen, Germany, assignor to VEB Nahmaschinenwerk Wittenberge, Wittenberge, Germany

Filed July 11, 1974, Ser. No. 487,688
Claims priority, application Germany, July 23, 1973, 172443
Int. Cl. D05b *57/32*
U.S. Cl. 112—200 7 Claims

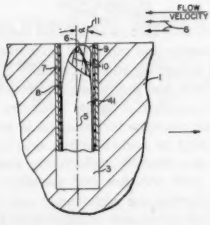


1. In a chain stitch sewing machine, a looper driving gear comprising a drive shaft, a crank on said drive shaft, a slide pivotally mounted on a crank pin of said crank for rotation relative thereto, said slide being slidably mounted in a slideway of a rocker element, said rocker element being secured to a looper axle normal to the axis of the drive shaft and parallel to said slideway to impart rotary reciprocating motion to said axle, an eccentric on said drive shaft, a coupling element rotable on said eccentric and coupling said eccentric to said rocker to impart reciprocating movement to said rocker and said looper axle in the direction of the axis of that axle, the crank and eccentric being constituted as means imparting elliptical movement to a looper element secured to said axle.

3,892,194
CAMBERED MISSILE NOSE

Edmund F. Goedde, San Jose; Gary D. Hoover, and Edward J. Barakauskas, both of Saratoga, all of Calif., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 23, 1973, Ser. No. 408,959
Int. Cl. F42b *15/20*
U.S. Cl. 114—20 R 4 Claims

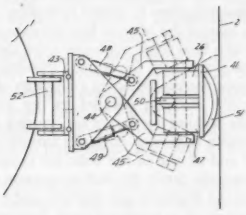


1. A missile for undersea launching from a moving submarine, said missile comprising a nose portion forming a leading end thereof, said nose portion having a symmetrical outer surface and an axisymmetric cambered nose portion overlaying said symmetrical nose portion, the axis of the cambered nose portion forms an angle of approximately 5° to approximately 15° with respect to the axis of the missile for reducing undesirable hydrodynamic forces and moments when said missile is being launched from said moving submarine.

3,892,195
WATERCRAFT COUPLING SYSTEM

Hans-Georg Janssen, Bremerhaven, Germany, assignor to Aktien-Gesellschaft "Weser", Bremen, Germany

Division of Ser. No. 362,185, May 21, 1973, which is a continuation of Ser. No. 104,249, Jan. 6, 1971, abandoned. This application Sept. 5, 1973, Ser. No. 394,449
Claims priority, application Germany, Jan. 17, 1970, 2001996; Jan. 14, 1970, 2012289; Nov. 30, 1970, 2058738
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 R 4 Claims

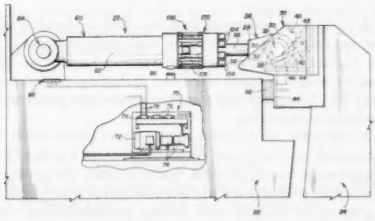


1. A watercraft coupling system, particularly for coupling tugs and barges, comprising a first watercraft having a bow; a second watercraft having a stern; elongated flexible coupling elements releasably secured to and extending laterally along said first watercraft and having end portions connectable with said stern; and a shifting unit releasably and articulately connected with said bow and said stern, respectively, for enabling relative shifting movements of said watercraft with reference to one another, said unit comprising one component in form of an elongated upright post mounted on said stern and defining a vertical guide track, and another component comprising a roller mounted for turning movement about an at least substantially horizontal axis and having a profiled portion in form of an outer circumferential recessed groove which at least partially embraces said post for freely slidable displacement along said guide track defined by the same, during relative movements of said watercraft.

3,892,196
TUGBOAT-BARGE CONNECTION SYSTEM

John J. Swoboda, Jr., and Lawrence T. Boatman, both of Victoria, Tex., assignors to Victoria Machine Works, Victoria, Tex.

Filed Oct. 19, 1973, Ser. No. 408,091
Int. Cl.[2] B63B *21/60*
U.S. Cl. 114—235 A 12 Claims



1. A boat-barge connection system comprising:
first latching means mounted on the barge;
second latching means mounted on the boat for cooperation with the first latching means to couple the boat to the barge;
cylinder means supporting the second latching means on the boat and adapted for actuation by fluid pressure to extend

the second latching means and thereby facilitate coupling and uncoupling of the first and second latching means and to retract the second latching means and thereby draw the boat and the barge together and into a predetermined positioning with respect to each other;

said cylinder means including a housing comprising a main portion secured to the boat and a locking portion and a piston rod extending from the housing to the second latching means and including a locking portion, said locking portion of the housing and the piston rod operable for locking the cylinder means in the retracted condition; and

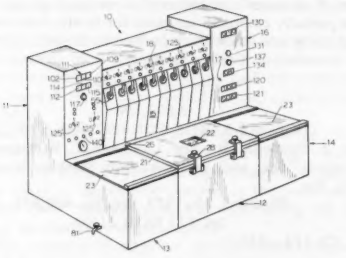
emergency release means independent of the locking means for selective actuation to permit operation of the cylinder means to extend the second locking means and thereby uncouple the boat from the barge even though the locking means remains in the locked condition, said emergency release means including a plurality of bolts extending from the housing parallel to the piston rod and through the locking portion of the housing and a plurality of expandable nuts each normally threadedly secured to the distal end of one of the bolts for cooperation therewith to normally retain the locking portion of the housing secured to the main portion thereof, said nuts responsive to the receipt of a predetermined emergency signal to disconnect the locking portion of the housing from the main portion thereof.

3,892,197

LIGHT MICROSCOPY PROCESSING APPARATUS

Thomas D. Kinney, 3120 Devon Rd., Durham, N.C. 27707, and John E. P. Pickett, 3323 Pinafore Dr., Durham, N.C. 27705

Filed Apr. 22, 1974, Ser. No. 463,055
Int. Cl. B05c *3/109*
U.S. Cl. 118—7 **14 Claims**



1. A closed processing system enabling a plurality of individual specimens of tissue to be separately contained while being bathed simultaneously for varying lengths of time in successive selected tissue solutions including melted paraffin so as to fix, dehydrate and clear the specimens preparatory to embedding, comprising:

a. a plurality of uniform tissue receptacles each being adapted to contain and physically isolate a group of tissue specimens having at least one specimen per group, each receptacle having a body portion defining an open cavity adapted to receive and retain specimens and closure means removably received by said body to enclose said cavity, the material forming said receptacles being inert to all of said solutions and having for each of said solutions at least some portion through which each of said solutions may be transferred;

b. a cabinet;

c. an electrically heated, temperature controlled container mounted in said cabinet and having a movable cover and being adapted for melting and holding melted paraffin;

d. a plurality of closed solution containers mounted in predetermined order in a storage compartment in said cabinet proximate said paraffin container, each solution container containing a particular tissue processing solution and with said melted paraffin container collectively containing all of the said tissue solutions in which said specimens are processed;

e. air pump means having associated remotely electrically controllable first valve means mounted proximate said cabinet and associated interconnected piping means, said pump means providing a pressure and vacuum source and said first valve means being selectively operable to connect said source whereby to produce a selected pressure or vacuum condition in said piping means;

f. a processing chamber mounted in said chamber and having an end wall immediately adjacent an end wall of said melted paraffin container, said chamber having a pressure sealable top cover and being adapted to receive and process therein selected numbers of said receptacles simultaneously said chamber being temperature controlled and electrically heated and being connected to said piping means thereby enabling the corresponding selected pressure and vacuum condition in said piping means to be produced in said chamber;

g. a second remotely electrically controllable valve means mounted in said cabinet and having on one side a fluid connection to said chamber and on the other side a fluid connection to said paraffin container enabling the paraffin contents thereof to be exchanged between the chamber and said paraffin container, said fluid connections for said second valve means being of minimal length and being electrically heated and maintained at a temperature above the melting point of said paraffin;

h. a third remotely electrically controllable valve means mounted in said cabinet and having on one side a fluid connection of minimal length to said chamber and on the other side a port for transfer of solutions therethrough;

i. fourth remotely electrically controllable solution transfer valve means positioned in said cabinet between said processing chamber and said storage compartment, said fourth valve means being fluid connected on one side to said third valve transfer port and on the other side having separate fluid connections to each of said solution containers and being remotely electrically controllable for enabling each solution container connection on the one side of the fourth valve means to be selectively and independently connected to said transfer port for a predetermined time while all other solution container connections are isolated therefrom and at other times to isolate all of said solution container connections from said tranfer port;

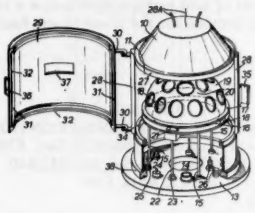
j. an electrical power source; and

k. remotely operable electrical control means connected to said power source and mounted proximate said chamber for remotely powering and electrically operating each of said valve means and temperature controls in a predetermined time sequence program whereby with a selected number of said receptacles installed in said chamber and said cover sealed on said chamber, said solutions and said paraffin are successively, selectively and independently drawn from said solution and paraffin containers, are measured by timing the withdrawal and admitted to said chamber under a vacuum condition in a predetermined volume, retained for predetermined times at a predetermined pressure and at the end of each processing step being forced back to a respective said solution and paraffin container by pressure from said pump means source in a corresponding processing sequence such that selected of said solutions and said melted paraffin are separately and independently exchanged with each said group of specimens while maintaining said system closed, said paraffin transferred a minimal distance, and each said group physically isolated.

3,892,198
ENCLOSURES FOR VACUUM COATING

Christopher David Dobson, 157 Linden Ct., Newbridge, Monmouthshire, England

Filed June 27, 1974, Ser. No. 483,501
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **5 Claims**

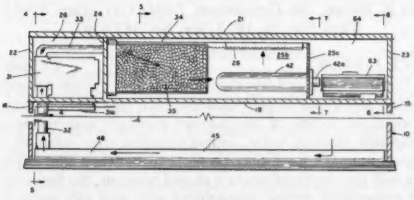


1. A cylindrical vacuum enclosure for vacuum coating processes comprising a main body portion of part-cylindrical form including part of the side wall of the cylindrical enclosure which is shaped to define a lateral opening extending around substantially 180° of the periphery of the cylindrical enclosure, said enclosure including top and bottom circular plates, said bottom plate defining apertures to accommodate electrical, mechanical or other inputs to the enclosure, said top and bottom plates connected to said main body portion with an air-tight seal, a workholder within said enclosure arranged to support devices for coating, and means for supporting and rotating said workholder, a movable access closure member of approximately semi-cylindrical shape arranged to form a seal with the body portion around said lateral opening, mutually cooperating vertical flanges being provided between said body portion at the two sides of the lateral opening and at the two sides of the closure member, the mutually cooperating flanges being provided at an angle of from 15° to 60° from the tangent to the side wall of the cylindrical enclosure and to the closure member respectively, a hinge for the closure member provided between one pair of said mutually cooperating flanges on one said side, and a locking flange on the other pair of flanges for retaining the closure member in sealing relationship to the peripheral walls of the opening in the body portion, and a sealing ring between the cooperating surfaces of the closure member and the peripheral walls of the opening in the main body.

3,892,199
AQUARIUM

Jerome F. Huyler, Winnetka, Ill., assignor to Aquatium, Inc., Winnetka, Ill.

Continuation-in-part of Ser. No. 258,706, June 1, 1972, abandoned. This application June 29, 1973, Ser. No. 374,911
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **21 Claims**



1. An aquarium module for filtering, heating, and aerating water in an aquarium including a water tank having a bottom and an open top, said module comprising:

a housing mounted on the top of the water tank, said housing having a top and a bottom and an open interior positioned over the water tank, with the open interior comprising a pump compartment and a water compartment, the water compartment having an open interior formed by a bottom and raised side walls extending around the periphery of the water compartment, said water compartment further comprising inlet means for receiving water and outlet means for delivering water back to the tank, said outlet means comprising an elongated opening in the bottom of the water compartment that leads downwardly to the tank;

mechanical pump means mounted in the pump compartment and having an inlet in communication with the water in the tank and an outlet in communication with the inlet means of the water compartment, said pump means being adapted to mechanically pump water from the tank, circulate the water through the water compartment, and return the water back to the tank at a sufficient rate of speed to permit the development of a biological filtration environment in filter means mounted in the water compartment;

high capacity gravity filter means comprising a removable filter tray resting in the water compartment, said filter tray having a raised perforated bottom and raised side walls, said filter tray having an open top fitted with a removable cover and having an open interior that is adapted to be at least partially filled with a filter medium means for removing impurities from the water, said filter tray having inlet means for receiving unclarified water at the top of said filter medium from the pump means outlet and outlet means at a lower portion thereof for delivering clarified water to the interior of the water compartment, said inlet and outlet means being positioned such that the water flows downwardly through the filter medium means under the influence of gravity as it passes from the inlet means to the outlet means;

water heater means mounted beside the filter means in the interior of the water compartment, said water heater means positioned adjacent the water compartment outlet means such that water passing from the filter means outlet means must first pass in proximity to the heater means before it can return to the tank through the water compartment outlet means; and

natural aeration means mounted in the water compartment and comprising a raised partition means mounted along the edge of the water compartment outlet means and separating the water compartment outlet means from the rest of the interior of the water compartment, said partition means extending upwardly to a position above the height of the water heater means in the water compartment and being adapted to disperse clarified and heated water in the water compartment into a thin sheet and direct it downwardly in waterfall fashion through the water compartment outlet means back to the tank, said natural aeration means being adapted to aerate the water as it falls downwardly into the tank.

3,892,200
AQUARIUM HOUSING

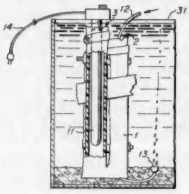
Larry R. Ramsauer, 5862 Paddon Cir., San Jose, Calif. 95123

Filed Apr. 29, 1974, Ser. No. 465,128
Int. Cl. A01k *64/00*
U.S. Cl. 119—5 **10 Claims**

1. An aquarium housing for use in an aquarium to house aquarium devices while allowing proper operation of the housed devices and to act as a conduit for tubing and/or wiring being routed from outside the aquarium to a device inside the aquarium, comprising:

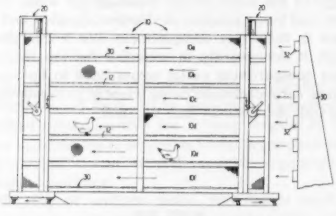
a structure having a decorative exterior, said structure forming at least one internal cavity;

at least one orifice in the top of said structure for providing device, tubing and/or wiring entry into each of said cavities;
at least one orifice in the bottom of said structure for providing device, tubing and/or wiring entry into each of said cavities;
at least one first flow hole in the top one third portion of at least one of the sides of said structure for providing water flow through said cavities;
at least one second flow hole in the bottom one third portion of at least one of the sides of said structure for providing water flow through said cavities;



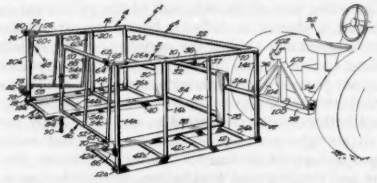
said cavity or cavities acting as a decorative protective housing for aquarium devices placed into the cavity through either said top or bottom orifices;
said cavity and said top and bottom orifices coacting to form a conduit for tubing and/or wiring to be routed from outside the aquarium to inside the aquarium;
said first and second flow holes providing proper circulation of water through the cavity to allow the proper efficient operation of heaters and/or filters housed within said cavity.
said structure hiding the detractiveness of any device, tubing and/or wiring being housed or routed through said structure when being viewed from any viewing side of said aquarium.

3,892,201
BROODING AND REARING OF POULTRY
Lloyd B. Crawford, Wynyard, Canada, assignor to Crawfords Foods Ltd., Saskatchewan, Canada
Filed Nov. 30, 1973, Ser. No. 420,466
Claims priority, application Canada, Dec. 18, 1972, 159320
Int. Cl.[2] A01K *31/06*
U.S. Cl. 119—17 **9 Claims**



1. A method of rearing poultry in a cage unit including a floor having a substantially continuous surface comprising the steps of:
a. positioning a number of infant poultry in said cage unit such that they are supported directly on said continuous floor surface;
b. supplying food and water to said poultry and maintaining the cage unit as a temperature adequate as to provide for growth of said poultry;
c. permitting the poultry to remain in said cage unit for a selected growing period;
d. the droppings produced by the growing poultry being allowed to continuously build-up on said continuous floor surface during said selected growing period substantially in the absence of litter to form a layer of substantially litter-free manure thereon with said poultry being supported directly on said layer of manure;
e. and effecting drying of said layer of manure throughout the growing period of said poultry to maintain the average moisture level of said manure layer below a preselected level thus to provide for the comfort and health of said poultry.

3,892,202
BALE HANDLING AND FEEDING CONTAINER
Leon G. Feterl, 411 W. Center, Salem, S. Dak. 57059
Filed Mar. 18, 1974, Ser. No. 452,440
Int. Cl. A01k *5/00*
U.S. Cl. 119—60 **9 Claims**

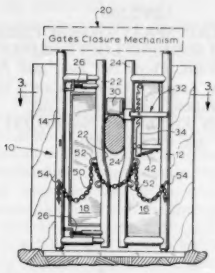


1. Bale pickup and feeding apparatus for cattle comprising: a container having a pair of upright, spaced apart side walls, an upright rear wall extending between said side walls, and a front end with an opening therein opposite said rear wall;
a plurality of vertically extending, animal feeding spaces along the length of said side walls defined by a plurality of horizontally spaced, upright rigid members forming a portion of said side walls, whereby livestock may project their heads through said feeding spaces to feed on a large hay bale within said container;
gate means hingedly mounted on the forward ends of said side walls for swinging movement to a closed position across said front end opening of said container; and
elongated bale lift and support means on the bottom of said container comprising a pair of elongated, spaced apart, pickup arms positioned inwardly from said side walls and extending generally parallel thereto from said rear wall toward said open front end of said container for insertion under a large hay bale.

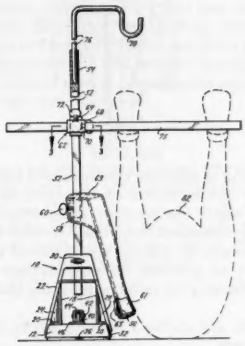
3,892,203
HEADGATE
James B. Tieben, 106 Cottonwood, Dodge City, Kans. 67801
Filed July 30, 1973, Ser. No. 383,830
Int. Cl. A61d *3/00*
U.S. Cl. 119—99 **7 Claims**

1. In a livestock headgate including a pair of upright support members and a pair of gate sections, each gate section pivotally mounted to one of the support members and having a substantially vertical, outer, animal engaging edge, whereby a confined animal's neck may be secured between said edges when said gate sections are in a closed position, the improvement comprising: means cooperating with said gate sections for restraining the vertical movement of the confined animal's head, and self-tightening means for positioning said restraining means at different levels, said self-tightening means also

including means for locking said restraining means at any one of said levels whereby said restraining means can only move into further restraining position to minimize the vertical movement of the confined animal's head.

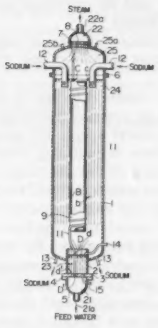


3,892,204
ADJUSTABLE SUPPORT
Paul V. Belkin, 5320 Nortn Highway 140, Florissant, Mo. 63033
Filed May 11, 1973, Ser. No. 359,619
Int. Cl. A61d *3/00*
U.S. Cl. 119—103 **19 Claims**



1. A support that is releasably securable to a table regardless of the thickness of the top of said table, said top of said table having an upper surface on which an animal is to be held and supported while said animal is insensible and is resting on its back, said support being releasably securable to said table regardless of the cross sections of the edges of said top of said table and comprising a base which has all portions thereof disposed atop said upper surface of said top of said table, said base being releasably securable to any desired area of said upper surface of said top of said table, including areas which are located substantial distances inwardly of the closest edge of said top of said table, whereby said base can be releasably secured to whatever area of said upper surface of said top of said table is optimum for free and full access to desired portions of the anatomy of said animal, an upright which is supported by and which extends upwardly from said base, and a means which receives its support from said upright but which extends laterally outwardly from said upright and which is spaced above the level of said base to releasably hold the upwardly-extending legs of said animal while said animal is insensible and is resting on its back atop said upper surface of said top of said table.

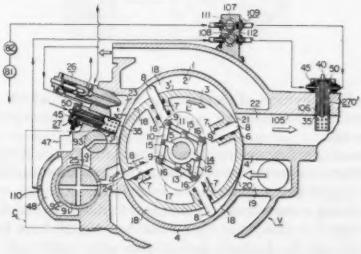
3,892,205
STEAM GENERATOR
Masanori Naitou; Hiraku Nakano; Shinichi Kashiwai; Chikara Satou, and Motoaki Utamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan
Filed Feb. 5, 1974, Ser. No. 439,699
Claims priority, application Japan, Feb. 16, 1973, 48-18265
Int. Cl. F22b *1/06*
U.S. Cl. 122—32 **15 Claims**



1. A steam generator of a vertical multitubular (bushing) type having at least one tube plate at the lower end of the tubes and using two fluids flowing inside and outside said tubes respectively and reacted by contact with each other.

characterized by a reservoir located outside said tubes and on said tube plate at the lower end of said tubes, and an intermediate heating medium disposed in said reservoir, said medium being physico-chemically inert to said both fluids, and is greater in density than said both fluids, and has melting point of not higher than 300°C.

3,892,206
COMBUSTION DEVICE FOR HEAT MOTORS
Akira Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan
Filed Mar. 20, 1973, Ser. No. 343,150
Claims priority, application Japan, Mar. 23, 1972, 45-29493
Int. Cl. F02b *53/12*
U.S. Cl. 123—8.09 **3 Claims**



1. In combination, a vane-type rotary engine and a combustion device for igniting fuel-air mixture in a combustion chamber of the vane-type rotary engine, comprising

a cylindrical body air-tightly fitted to the wall of the combustion chamber and projecting into the combustion chamber,

a hollow cylinder coaxially attached to the inner end of said cylindrical body for defining therein a plug chamber opening to the combustion chamber,

an air supply passage extending through said cylindrical body and having an air discharge port opening at the inner end of said cylindrical body to said plug chamber for supplying compressed air to the plug chamber,

a fuel supply passage extending through said cylindrical body and having a fuel discharge port opening at the inner end of said cylindrical body to said plug chamber adjacent to said air discharge port for supplying fuel to the plug chamber,

a fuel permeating member or wick fitted into said fuel discharge port with one end thereof facing said plug chamber,

spark ignition means disposed in said plug chamber adjacent to said air and fuel discharge ports and connected to an electric power source for generating a spark to ignit fuel-air mixture in said plug chamber, and

means for cutting off the electrical connection between said spark ignition means and said electric power source when the speed of said engine reaches a predetermined speed, and further including a first fuel source for a high grade fuel, a second fuel source for a low grade fuel, a directional control valve for communicating either of said first and second fuel sources with said fuel supply passage, and means for controlling said directional control valve to communicate said first fuel source with said fuel supply passage when the speed of said motor is less than a predetermined value and said second fuel source with said fuel passage when the speed of said motor is more than said predetermined value.

3,892,207

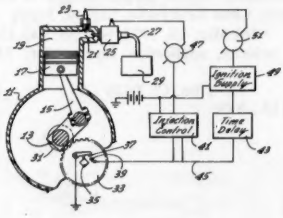
INTERNAL COMBUSTION ENGINE

Carl A. Weise, deceased, late of San Pedro, Calif., and Helen C. Weise, administratrix, 6 Diamonte Ln., San Pedro, Calif. 90732

Continuation of Ser. No. 5,214, Jan. 23, 1970, abandoned. This application Feb. 3, 1972, Ser. No. 223,381

Int. Cl. F02b *3/00;* **F02p** *5/04*

U.S. Cl. 123—32 SA **22 Claims**



1. The method of controlling the time at which ignition occurs in a fuel-injected, spark ignited, engine comprising the steps of

creating a first timing signal during each engine cycle,

initiating injection of fuel into a combustion chamber of the engine in response to the first signal,

deriving a second signal from said first signal, which second signal occurs later than said first signal by a predetermined, fixed, clock-time interval after each said creation of the first signal, which clock-time interval does not vary with change of engine speed or the frequency of occurrence of the first signal, and

creating a spark in the combustion chamber of said engine in response to the second signal while the fuel is so positioned in the combustion chamber that it may be ignited by the spark.

3,892,208

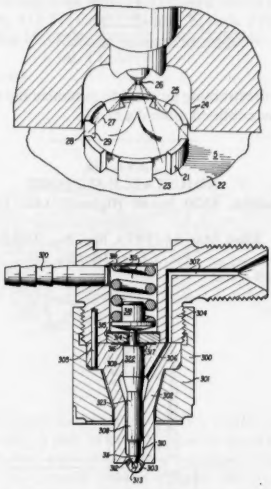
MODIFIED INJECTION SPRAY CHARACTERISTICS FOR SPACED BURNING LOCI ENGINES

Harold Elden Anderson, Playa Del Rey, and Perry Lester Kruckenberg, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed July 5, 1972, Ser. No. 269,232

Int. Cl. F02b *3/04*

U.S. Cl. 123—32 R **1 Claim**



1. In a method of effecting combustion in internal combustion engines, which method is characterized by the steps of:

generating, within internal combustion engine means, and in energy communicating relation with engine piston means movable in cylinder means of said engine means, a plurality of generally mutually distinct burning loci, with said burning loci defining generally spaced centers of burning;

concurrently, and during a working stroke of said engine piston means,

transmitting combustion supporting gas, heated by compression and combustion, into said burning loci, and

generating and transmitting streams of combustible fuel into said burning loci,

each said burning loci substantially receiving at least one of said fuel streams and at least some of said heated gas; limiting the time duration of the generation of said fuel streams so that at least the majority of fuel in said streams passes into said burning loci during a working stroke of said engine piston means;

providing a plurality of spaced wall means, with each such wall means peripherally confining and defining

a fuel and heated gas agitation zone individually associated with and communicating with a said burning loci; each said peripherally confined agitation zone and a burning loci associated therewith receiving fuel from at least one fuel stream directed thereinto during said working stroke of said engine piston means;

maintaining the existence and a generally discrete relation of said burning loci during said working stroke of said engine piston means and

utilizing energy generated through operation of said burning

loci to induce said working stroke of said engine piston means;

the improvement comprising, in combination with said steps, the additional steps of:

providing a fuel injection nozzle with a plurality of orifices, all of which orifices are located in a common plane and are each directed toward a respective burning loci,

slidably disposing a spring-biased valve tip in said nozzle such that said valve tip is subjected to and is responsive to the pressure of fuel being fed through said nozzle to open said orifices against its spring bias;

transmitting fuel through passage means leading from fuel pump means to said fuel injection nozzle means to generate said fuel streams through said orifices such that said fuel streams are directed into said respective agitation zones and burning loci associated therewith;

during a relatively lower engine speed and/or load condition maintaining a portion of said valve tip within said common plane of said orifices and adjacent said orifices to partially obstruct an inlet of each of said orifices to provide a partial obstruction to the entry of fuel into said orifices in a manner restricting said flow of fuel toward said orifices to a relatively thin flow path extending transversely of each of said inlet means of said plurality of orifices to:

eliminate relatively quiescent, stagnant flow zones within said orifices, and

produce a generally diverging and relatively atomized spray of fuel leading from said orifices to said burning loci; and

during a relatively higher engine speed and/or load condition displacing said valve tip means free of said common plane to remove said flow obstruction in a manner permitting said fuel to flow substantially axially toward said orifices and form generally solid configurations of fuel streams leaving said orifices and directed toward said agitation zones and burning loci associated therewith.

3,892,209

LIQUID-COOLED RECIPROCATING ENGINES, MORE PARTICULARLY MARINE ENGINES

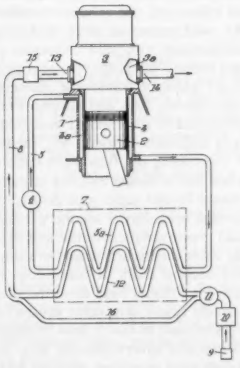
Felix Amiot, 2, rue Georges Leygues, Paris, France

Filed Mar. 11, 1974, Ser. No. 450,159

Claims priority, application France, Apr. 3, 1973, 73.11905

Int. Cl. F01p *3/00*

U.S. Cl. 123—41.29 **9 Claims**



1. A liquid-cooled reciprocating engine having a head; and a body connected to the head;

the head and the body respectively being formed of differing metals;

cooling chambers being provided in said head and body; the body being formed of metal more prone to corrosion than the metal forming the head; and wherein

a liquid cooling system is provided for the engine and said system comprises;

at least a first circuit and a second circuit with means for receiving, respectively, a first coolant in said first circuit and a second coolant, different from said first coolant, in said second circuit, the first circuit being closed and connected in fluid communication with the cooling chamber of said body of the engine, said first circuit including a heat exchanger, and the second circuit being open and connected in fluid communication with the cooling chamber of the said head of the engine;

the arrangement being such that the second coolant for said second open circuit is more corrosive than the first coolant for said first closed circuit;

said heat exchanger being provided to permit cooling of the coolant of the first closed circuit.

3,892,210

COOLED EXHAUST VALVE FOR AN INTERNAL COMBUSTION ENGINE

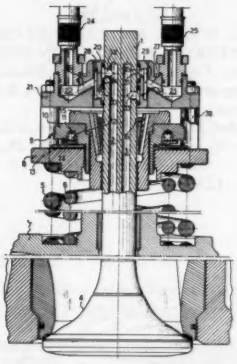
Karl Kuhn, Saint-Germain-en-Laye, and Jean-Claude Bouquet, Pantin, both of France, assignors to Societe d'Etudes de Machines Thermiques, Saint-Denis, France

Filed Feb. 14, 1974, Ser. No. 442,648

Claims priority, application France, Mar. 13, 1973, 73.08917

Int. Cl. F01l *1/32*

U.S. Cl. 123—90.3 **5 Claims**



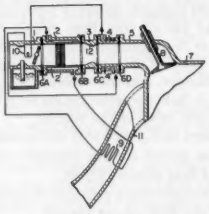
1. An internal combustion engine valve having a valve stem and head of the type cooled by circulating a fluid in channels provided in the valve stem and head, comprising valve springs mounted about the valve stem, a valve rotating device including an annular plate mounted around the valve stem and receiving the load of the valve springs, a rotary joint mounted around the valve stem and having passage means therein connecting the channels of the valve stem to fluid supply and return conduits, said rotary joint being secured to said annular plate whereby said rotary joint and said annular plate are movable axially jointly with the valve and are substantially retained against rotation relative to the valve stem.

3,892,211

FUEL-AIR MIXTURE HEATING DEVICE FOR INTERNAL COMBUSTION ENGINES

Yoshishige Oyama, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Dec. 13, 1972, Ser. No. 314,500
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 R **13 Claims**



1. A fuel-air mixture treating device adapted to be interposed between a carburetor and an intake manifold of an internal combustion engine comprising:

a. fuel-air mixture heating means disposed downstream of said carburetor,

b. fuel flow control means disposed downstream of said fuel-air mixture heating means for forcing vaporized low-volatile components of fuel heated and vaporized by said fuel-air mixture heating means to concentrate toward and flow close to the axis of said fuel-air mixture heating device and said intake manifold, and

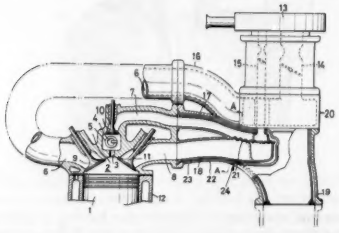
c. cooling means disposed downstream of said fuel flow control means for cooling the fuel-air mixture flowing toward said intake manifold using a cooling medium which does not directly contact the fuel-air mixture.

3,892,212

INTEGRAL INTAKE AND EXHAUST CONDUIT FOR INTERNAL COMBUSTION ENGINE

Hisashi Tamai, Tokyo, and Yoshitoku Iizuka, Toda, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 22, 1973, Ser. No. 372,746
Claims priority, application Japan, June 28, 1972, 47-76212
Int. Cl. F02b *19/10, 19/18*
U.S. Cl. 123—122 AB **7 Claims**



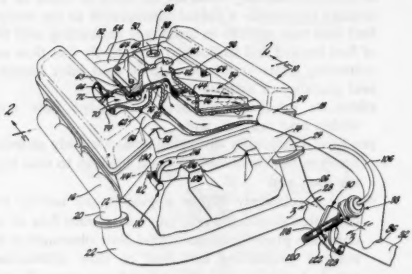
1. An integral intake and exhaust conduit for an internal combustion engine comprising means forming an intake passage for directing an air-fuel mixture to a combustion chamber, means forming an exhaust passage for emitting the exhaust from said engine, partition means disposed between said intake passage means and said exhaust passage means for transferring heat from said engine exhaust to said air-fuel mixture, said partition means having corrugations therein for impeding the flow of air-fuel mixture within said intake passage means while transferring heat thereto, said partition means being located at a distance from said engine, said intake passage means and said exhaust passage means being displaced from one another between said partition means and said engine, a housing, said intake passage means and said exhaust passage means being displaced within said housing and heat insulating means disposed within said housing and about said intake passage means and said exhaust passage means whereby the heat generated by said engine is retained within said housing, said intake passage means and said exhaust passage means being of low thermal capacity.

3,892,213

QUICK HEAT MANIFOLD

Edward N. Cole, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 5, 1973, Ser. No. 394,459
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 H **2 Claims**

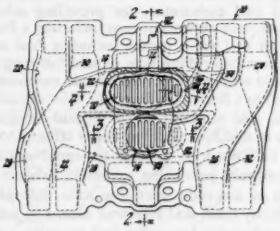


1. In a heated manifold for a V-8 internal combustion engine of the type having first and second banks of cylinders each with an exhaust manifold, and an intake manifold having riser bores therein and an induction passage for supplying air-fuel mixture to intake valves the improvement comprising: a first pair of transverse runners supplying air-fuel mixture to cylinders in the first bank of cylinders, a second pair of transverse runners supplying air-fuel mixture to cylinders in the second bank of cylinders, an insert plate in the intake manifold located below the riser bores for collecting fuel droplets during engine start, a manifold crossover plate connected to the underside of the intake manifold having a crossover passage with first and second inlets thereto, means for communicating each of said inlets with the exhaust manifold of one of the cylinder banks, said crossover plate including an outlet thereon in communication with said crossover passage between said first and second inlets thereto at a point between said first and second pairs of transverse runners, a Y-configured exhaust pipe having first and second branches each having an inlet connected to the exhaust manifold of the first and second banks of cylinders, respectively, means including an outlet pipe for combining the flow from each of said first and second branches into a single exhaust stream, thermally responsive valve means in said outlet pipe downstream of each of said first and second branches, a second exhaust pipe connected between said crossover plate outlet and the outlet pipe downstream of said valve means at a point between and underlying said first and second pairs of transverse runners, for defining a flow path for exhaust heat from the crossover passageway, said thermally responsive valve means being operative during cold engine start to block flow through said separate exhaust branches and divert exhaust flow through said first and second inlets, said crossover passage and said crossover plate outlet for directing exhaust from eight cylinders against said insert plate to quickly increase the temperature of the insert plate for evaporating fuel droplets collected thereon during cold engine start.

3,892,214
CAST-IN E.F.E. HOT PLATE

Walter C. Heidacker, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1973, Ser. No. 410,767
Int. Cl. F02m 31/00
U.S. Cl. 123—122 AC 2 Claims



1. An engine manifold construction comprising: a first induction manifold casting portion having riser bores therein for receiving an air-fuel mixture from a carburetor, means forming an induction plenum in said first manifold casting portion located below said riser bores, means defining transverse runners in said induction manifold portion in communication with said induction plenum, a second intake manifold casting portion formed integrally with said first portion and having means forming an exhaust heat crossover passage therethrough with openings at opposite ends thereof in communication with exhaust manifolds of the vehicle, said second portion including a pair of spaced segments thereon deformed inwardly of the crossover passageway and underlying each of said riser bores, said first intake manifold casting portion including a floor therein having a pair of spaced apart oval shaped depressions therein, a cup-shaped thermally conductive fuel evaporation plate located within each of said oval shaped openings including a continuously formed oval shaped peripheral flange thereon cast in place within said floor to provide a sealed joint between the induction plenum and the crossover passage, said inwardly formed segments forming a restricted passage under each of said plates to concentrate exhaust heat against said plates at a point directly underlying said riser bores, said second casting portion including convolutions formed therein on either side of said inwardly deformed segments thereon to reinforce the cast in place flange and to reduce impingement of exhaust heat at the flange thereby to maintain a positive seal joint therebetween during engine operation.

3,892,215
ELECTRICALLY HEATED INTAKE MANIFOLD

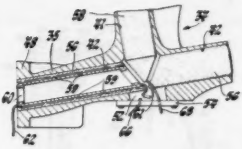
Robert Hickling, Royal Oak, Mich.; Joe W. Posey, Newport News, Va., and Irvin D. Wilken, Sterling Heights, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 7, 1973, Ser. No. 413,521
Int. Cl. F02m 31/00
U.S. Cl. 123—122 F 10 Claims

1. A heated intake manifold for an internal combustion engine said manifold comprising

a housing including passage defining means forming a plurality of connecting passages terminating in individual runners adapted to be connected to the respective inlet ports of an associated engine, the portion of said passage defining means forming at least the inner surfaces of said individual runners being made of an electrical and heat insulating material,

an electrical heating element in each of said runners, each said element comprising a thin walled tube insertable in its respective runner and covering a major portion of the wall surface thereof so as to define paths for air-fuel mixture to flow within said heating elements and prevent contact of at least a major portion of the air-fuel mixture passing through said manifold with the walls of said runners, and

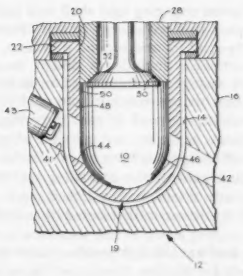


spacing means maintaining an insulating clearance between substantial portions of the walls of said heating elements and said passage defining means.

3,892,216
COMPOSITE ARTICLE AND METHOD OF MAKING SAME

Louis J. Danis, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 23, 1973, Ser. No. 408,697
Int. Cl. F02b 19/16, 19/10
U.S. Cl. 123—191 S 9 Claims



5. A member for defining an auxiliary compartment of the combustion chamber of an internal combustion engine comprising:

a. a core of generally tubular configuration having one end closed and the other end open, said tubular core being formed of metallic material having a thermal conductivity not less than 130 BTU/Ft²/Ft/°F/Hr. and having

i. at least two apertures formed in the wall thereof;

ii. a mounting portion formed adjacent said open end and adapted for mounting to the engine combustion chamber; and,

b. an outer surface portion encasing said core, said surface portion being formed of metallic material selected from the group consisting of aluminum, aluminum-rich alloy, nickel, or nickel-rich alloy, such that said member has

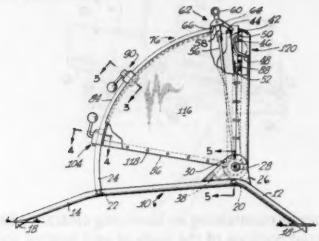
i. progressive oxidation resistance not less than that of AISI type 303 stainless steel when exposed for at least 2 hours to 0.1 atmosphere oxygen at 800° C,

ii. a bulk thermal conductivity of not less than 40 BTU/Ft²/Ft/°F/Hr.

3,892,217
BASEBALL PITCHING MACHINE

Pertti Tapani Raty, 160 The Donway West, Apt. 111, Don Mills, Ontario, Canada

Filed Dec. 27, 1973, Ser. No. 428,933
Int. Cl. F41b 7/00
U.S. Cl. 124—7 13 Claims



1. A device for throwing projectiles such as baseballs, comprising:
1. a support frame adapted for ground mounting,
2. a fixed horizontally disposed shaft carried by said support frame,
3. a fixed horizontally disposed axle carried by said support frame and extending coaxially within said shaft,
4. a throwing arm rotatably mounted at a first end upon said axle and having a projectile carrying basket adjacent a second end,
5. a mechanism mounted upon said shaft and rotatable therewith for releasably lockably engaging said throwing arm,
6. spring means engaging said shaft and said throwing arm and adapted to store energy as said throwing arm is rotated between first and second positions,
7. said mechanism includes a detent means adapted to releasably engage the throwing arm at said first postion,
8. a release means spaced from said first position for causing disengagement of said throwing arm from said detent means at the second position when a pre-selected amount of energy has been stored in the spring by rotational movement of the activating mechanism and said throwing arm about the fixed shaft, and
9. an upper frame rotatably carried by said shaft, said upper frame including a stop to halt rotational movement of said pitching arm at said first position, said upper frame having a lock for locking the upper frame to said support frame in an attitude giving a desired trajectory to a thrown projectile, said upper frame further including an arcuate channel within which an end portion of the mechanism travels during rotation thereof about said shaft, said arcuate channel having adjustably mounted therein the release for causing throwing arm disengagement from said mechanism.

3,892,218
COLD START METHOD AND APPARATUS FOR CARRYING OUT SAME

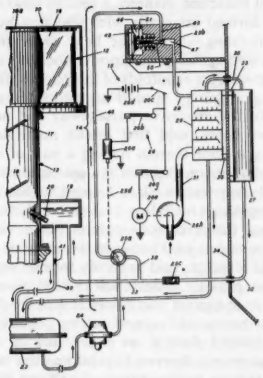
John F. Senger, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 295,041, Oct. 4, 1973, abandoned.
This application Nov. 12, 1973, Ser. No. 415,070
Int. Cl. F02m 1/16
U.S. Cl. 123—127 1 Claim

1. Apparatus for reducing exhaust and inoperative pollutants produced by a spark ignition internal combustion engine of the type including an air intake system, fuel intake system, and a carburetor interconnected therebetween for mixing said full-range fuel with air to form a combustible mixture for delivery to combustion chambers of said engine, comprising:

i. a stripping column adapted to selectively strip higher molecular weight constituents from said full-range fuel at all engine start conditions during flow through said column so as to provide a cold start fuel vapor effluent composed essentially of only low molecular weight constituents and a bottom liquid product composed essentially of only high molecular weight constituents,

ii. valve and conduit network means attached between said stripping column, a reservoir means for said full-range fuel and said carburetor, for providing selective flow conditions, said network means including a first plurality of conduit and valve means including first and second valve means controlling flow of said full-range fuel relative to said stripping column and said carburetor so as to allow, (a) in a first operating state, flow of said full-range fuel from said reservoir means to said stripping column and flow of said cold start fuel vapor effluent to a fuel well of said carburetor to provide for rapid starting of said engine without producing excessive exhaust pollutants and, (b) in a second operating state, full-range fuel to flow directly from said reservoir means to said fuel well of said carburetor bypassing said stripping column after said engine is in a normal running condition,



iii. condenser means positioned between said second valve means and said stripping column in operative contact with said cold start vapor effluent for providing liquefaction thereof,

iv. control means operatively connected to said first valve means of said valve and conduit network for changing operating state thereof so as to direct fuel flow relative to said stripping column, said reservoir and carburetor as a function of engine operating temperature,

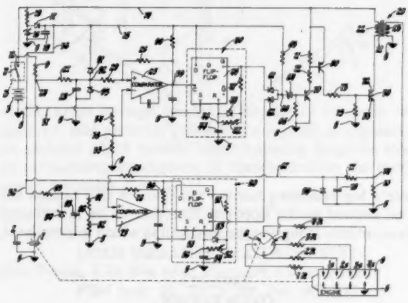
v. said network means also including a metering means positioned between said first valve means and said stripping column for metering flow of said full-range fuel to said column as a function of temperature, said metering means including a housing having an inlet opening in fluid contact with said first valve means, movable rod means projecting into said opening and a spring-loaded bimetallic-diaphragm means permanently attached both at a central region to said rod means and at an outer edge to said housing, for controlling movement of said rod means relative to said inlet opening whereby full-range fuel flow to said stripping column is accurately controlled as a function of temperature.

3,892,219

INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Mark E. Preiser, Santa Barbara, Calif.; Richard W. Johnston, Troy, and John G. Neuman, Grosse Pointe, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 27, 1973, Ser. No. 401,505
Int. Cl. F02p 1/00
U.S. Cl. 123—148 E 2 Claims



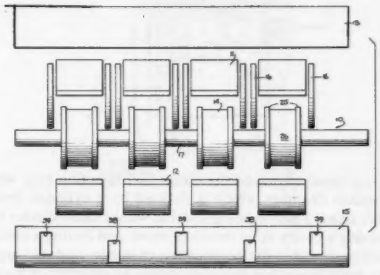
1. An internal combustion engine ignition system comprising in combination with a source of direct current potential and an ignition distributor having an electrical contact rotated in timed relationship with the engine through which ignition spark potential is applied to the spark plugs of the engine individually; a first monostable multivibrator circuit for producing a timing signal corresponding to each spark plug of said engine in timed relationship with and during each revolution of the crankshaft of said engine of a duration corresponding to the period of time ignition spark energy is to be applied to the said spark plug to which it corresponds; an ignition coil having a magnetic core, a primary winding which, during the buildup of the flow of an energizing current therethrough, produces a magnetic flux in said core and a secondary winding, connected to said electrical contact of said distributor, in which an ignition spark potential of sufficient magnitude to initiate an arc across the spark gap of each of said spark plugs is induced upon the interruption of the flow of energizing current through said primary winding, said primary winding having an inductance value which, with a predetermined magnitude of energizing current, will provide sufficient stored energy to maintain the arc initiated across each spark plug spark gap for a predetermined duration of time and said ignition coil having a primary to secondary winding turns ratio such that, during the buildup of energizing current through said primary winding, a potential sufficient magnitude to maintain the arc initiated across each spark plug spark gap is induced in said secondary winding; an ignition coil primary winding energizing circuit through which energizing current flows from said source of direct current potential through said ignition coil primary winding; an impedance element included in said ignition coil primary winding energizing circuit for producing an electrical potential signal of a magnitude proportional to the magnitude of said flow of energizing current; a second monostable multivibrator circuit for producing a plurality of control signals during each said timing signal, each in response to said electrical potential signal of a predetermined magnitude; and means reponsive to said timing signal for establishing and to each of said control signals for interrupting said ignition coil primary winding energizing circuit.

3,892,220

ROTARY VALVE

Dennis L. Franz, Rt. 1, Box 1198-B, Selah, Wash. 98942

Filed Dec. 28, 1973, Ser. No. 429,357
Int. Cl. F01l 7/16
U.S. Cl. 123—190 E 18 Claims



1. The combination of a rotary valve and an internal combustion engine having cylinder openings and intake openings and exhaust openings arranged to communicate with said cylinder openings, comprising

rotor means rotatable in the engine adjacent to said cylinder openings, said intake openings and said exhaust openings, said rotor means comprising rotatable shaft means and rotor units secured to said shaft means for rotation therewith,

said rotor units having sides and portions which are exposed to combustion in the engine cylinders and port means therein for opening and closing communication between the intake and the cylinders and the exhaust and the cylinders of the engine timed with the rotation of the engine,

means at both sides of said rotor units for sealing said rotor units substantially perpendicularly to the axis of rotation thereof,

ring means on said rotor units having a greater diameter than the portions of said rotor units which are exposed to combustion in the cylinders,

said ring means being positioned on both sides of said exposed portions,

bearing means in the engine for supporting said ring means for rotation therein,

said ring means having groove means thereon commencing at the trailing edge of said rotor unit port means and continuing for a substantial arc on said ring means,

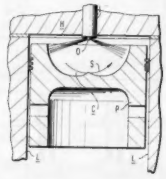
groove means in the engine for the passage of lubricant to said sealing surfaces,

said ring means being positioned adjacent said engine groove means to prevent the passage of lubricant through said engine groove means to said sealing surfaces except when the groove means on the ring means is adjacent said engine groove means.

3,892,221
CONSTRUCTION ARRANGEMENT OF COMBUSTION CHAMBER FOR USE IN DIRECT FUEL INJECTION TYPE DIESEL ENGINE

Motoyasu Kimbara, Yokohama, and Yoshitaka Yoshida, Tokyo, both of Japan, assignors to Isuzu Motors Ltd., Tokyo, Japan

Filed Sept. 18, 1973, Ser. No. 398,503
Claims priority, application Japan, Sept. 18, 1972, 47-93463
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 ST **2 Claims**



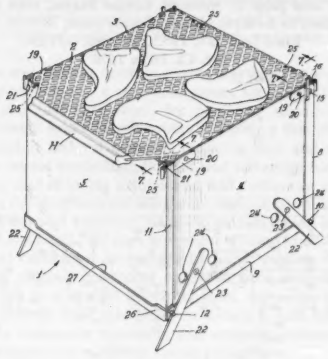
1. In a diesel engine of the direct fuel injection type with a combustion chamber which is defined by a cylinder liner, a cylinder head, a piston being slidable within said cylinder liner and having a cavity at its crown portion, and having a circular air swirl path within the combustion chamber, and said engine further including a fuel injection nozzle so attached at a cylinder head that its tip portion is disposed at the upper portion in the combustion chamber on the center of the cavity and having a plurality of orifices so as to timely inject metered fuel jets into said cavity, the improvement wherein: said cavity has its inner peripheral wall surface formed by five inner side wall surfaces, each being in a straight line and of the same length in its horizontal cross-section with respective two straight lines adjacent to each other being at an angle of 108° to each other, and five inner corner wall surfaces, each being in a substantially arc in its horizontal cross-section and being interposed between respective adjacent straight line inner side wall surfaces and being so formed that the ratio of the radius of the arc to that of a circle, which is inscribed with said straight line wall surfaces, is in the range of from 0 to 0.55, and wherein: said orifices are circumferentially spaced and face respective straight line inner wall surfaces with the fuel injection direction of each of said orifices so defined that fuel is injected from each orifice against said straight line inner peripheral wall surface of said cavity at a slant angle in the swirl direction in a cross-sectional plane at right angles to the piston axis.

3,892,222
FOLDING COMBINED BROILER, OVEN AND STOVE

Rolf E. Darbo, P.O. Box 2158, Madison, Wis. 53701

Filed July 5, 1974, Ser. No. 486,064
Int. Cl.² F24C *1/16;* **A47J** *37/01;* **F24B** *3/00*
U.S. Cl. 126—9 R **8 Claims**

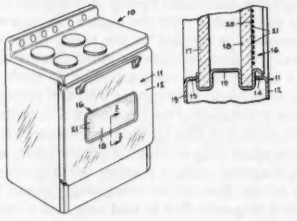
1. A folding combined broiler, oven and stove comprising a firebox composed of front, rear and side walls and a floor extending over the area enclosed by said walls, a grille covering the otherwise open top of said firebox, said side walls being respectively hinged to said floor along opposite sides thereof whereby said side walls may be sequentially lowered about their respective hinges to lie flat superjacent said floor, said floor and said front and rear walls each having flanges along the opposite sides thereof, pivot pins pivotally mounting said front and rear walls respectively at the front and rear ends respectively of said floor flanges, the arrangement being such that said front and rear walls may be sequentially lowered about their respective pivotal mountings to lie flat superjacent said side walls when the latter are in lowered position, said pivot pins extending outwardly from the firebox, two pairs of legs pivotally mounted respectively to the side walls, the location of the pivotal mountings for said legs being such that each leg may be rotated to rest against an associated pivot pin to provide a leg extending beyond the floor of said firebox and may be rotated in the opposite direction to lie in retracted position entirely alongside the side wall to which it is mounted.



3,892,223
OVEN DOORS

Harold E. McKelvey, Plymouth, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Filed Dec. 9, 1974, Ser. No. 530,659
Int. Cl.² F23M *7/00*
U.S. Cl. 126—200 **12 Claims**



1. An oven door comprising a main body portion having a substantially rectangular opening therein, a window unit mounted in said opening and comprising inner and outer transparent glass panels, with the inner panel being adjacent the oven and the outer panel exposed to the atmosphere, a plurality of discrete areas formed of heat radiating particles adhered to the outer surface of the outer glass panel, with the spaces therebetween forming unobstructed viewing areas through which the interior of the oven can be observed, said particles presenting a myriad of exposed minute surfaces which radiate heat emanating from the oven to the surrounding atmosphere to thereby reduce the temperature of the outer glass panel.

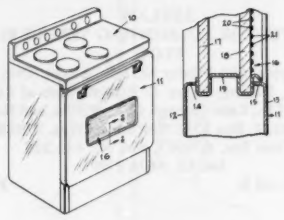
3,892,224
OVEN DOORS

Harold E. McKelvey, Plymouth, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Filed Sept. 3, 1974, Ser. No. 502,366
Int. Cl. F23m *7/00*
U.S. Cl. 126—200 **11 Claims**

1. An oven door comprising a main body portion having a substantially rectangular opening therein, a window unit mounted in said opening and comprising inner and outer

transparent glass panels, with the inner panel being adjacent the oven and the outer panel exposed to the atmosphere, a plurality of spaced stripes formed of innumerable heat radiating particles adhered to the other surface of the outer glass panel, with the spaces therebetween forming unobstructed



viewing areas through which the interior of the oven can be observed, said particles presenting a myriad of exposed minute surfaces which radiate heat emanating from the oven to the surrounding atmosphere to thereby reduce the temperature of the outer glass panel.

3,892,225

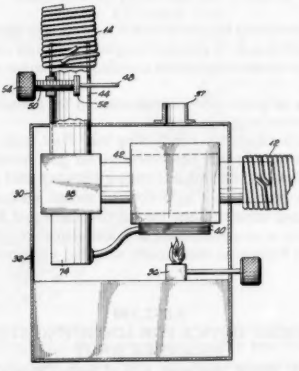
COLD WEATHER CLOTHING SUIT

Mike Twose, P.O. Box 648, Westport, Conn. 06880

Filed Sept. 28, 1973, Ser. No. 401,817

Int. Cl. A61f *7/06*

U.S. Cl. 126—204 **5 Claims**



1. A cold weather clothing suit incorporating air tight fabric which forms an insulated wall between the body of the user and the outside, the wall being so shaped as to have small openings at the hands, feet and chest of the user in addition to a large opening at the user's face, the suit comprising:

a combined air blowing and heating unit with a first input port and a second output port, the unit inducting air in the first port, heating the inducted air, and discharging the heated air through the second port;

tubing means connected to the second port and secured to the inside of the suit wall, the tubing means being vented at the hands and feet openings to direct heated air inside the suit;

a hollow tube with a vent to the outside disposed intermediate its ends, the tube being connected at one end to the chest opening and connected to the first port at its other end, thus enabling previously heated air from the interior of the suit to be withdrawn through the chest opening and mixed with incoming air from the outside, the mixture passing through the air blowing and heating unit for recycling; and

manually operable means extending into the tube through the vent and adapted to vary the relative proportions of previously heated air and incoming air in the mixture.

3,892,226

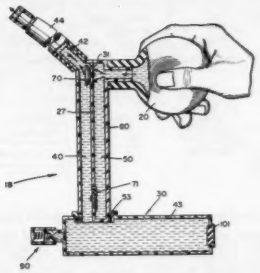
UROLOGICAL IRRIGATION-EVACUATOR

Irwin Charles Rosen, 717 Summit, Connersville, Ind. 47331

Filed Oct. 29, 1973, Ser. No. 410,716

Int. Cl.² A61M *7/00*

U.S. Cl. 128—2 F **11 Claims**



1. A urological irrigation-evacuator for alternately introducing fluid into and withdrawing fluid from a body cavity through a resectoscope, comprising a fluid-receptive, manually compressible bulb; a specimen collecting receptacle; a first fluid conduit one end of which is in open communication with the interior of said receptacle, and the other end of which includes means providing connection to and establishing communication with a resectoscope; a second fluid conduit in substantial parallelism with said first fluid conduit, the upper end of said second conduit having means providing connection to and establishing open communication with said bulb; valve controlled means establishing communication between the upper portions of said conduits; valve controlled means establishing a fluid connection between the lower portions of said first and second conduits; said valving means being constucted and arranged whereby to preclude transportation of fluid from said bulb to said receptacle via said first conduit during those periods of time when fluid is being transported from said bulb into a body cavity, and to preclude transportation of fluid withdrawn from the body cavity directly into said bulb and second conduit during those periods of time when fluid withdrawn from the body cavity is being transported into said first conduit; and means for filtering particulate matter from fluid transported from the first conduit into said second conduit.

3,892,227

SYSTEM FOR STIMULATION AND RECORDING OF NEUROPHYSIOLOGIC DATA

David B. Coursin, 1503 Hillcrest Rd., Lancaster, Pa. 17604, and Anthony Marmarou, 7 Valley Rd., Norristown, Pa. 19401

Filed Mar. 12, 1973, Ser. No. 340,560

Int. Cl.² A61b *5/04*

U.S. Cl. 128—2.1 B **6 Claims**

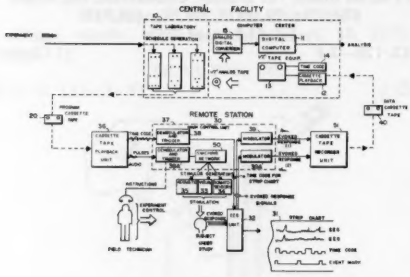
1. Apparatus, using a first tape containing electronic control signals and audio instructions, for collecting neurophysiological data from a patient at a remote station on a second tape in form for analysis of the data at a processing facility a substantial distance away from the remote station, comprising:

tape playback means for playback of the first tape;

stimulus generator means for the presentation of stimuli to the patient in response to the electronic control signals on the first tape played back by said tape playback means;

electroencephelograph means for sensing evoked responses of the patient to the stimuli presented by said stimulus generator means;

tape recorder means for the recordation of the evoked responses of the patient as sensed by said electroencephalograph means onto the second tape; and



main control means for synchronizing the recordation of the responses of the patient on the second tape by said tape recorder means with the playback of the electronic control signals on the first tape by the tape playback means.

3,892,228

APPARATUS FOR ADJUSTING THE FLEXING OF THE BENDING SECTION OF AN ENDOSCOPE

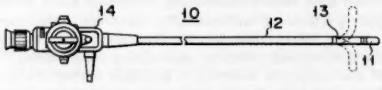
Kazuhiko Mitsui, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1973, Ser. No. 403,159

Claims priority, application Japan, Oct. 6, 1972, 47-115999; Oct. 25, 1972, 47-123333

Int. Cl.[2] A61B 1/00

U.S. Cl. 128—4 **8 Claims**



1. An endoscope comprising:

a distal end;

a bending section;

a flexible tube connected to the distal end through the bending section;

said bending section being flexible to deflect the distal end relative to the flexible tube;

a control unit for operating the distal end, said control unit having guide channels therein; and

apparatus for adjusting the flexing of the bending section comprising:

a pulley rotatably received in the control unit;

a pair of operating wires at least partly wound about the pulley in opposite directions on the opposite sides of said pulley, said operating wires being fixed to said pulley at one end and connected to the bending section at the other end thereof, and said operating wires being cut off at an intermediate part thereof; and

a pair of wire sagging-preventing devices slidably received in said guide channels of said control unit, and each including a pair of slidable members respectively coupled between the cut ends of said cut operating wires whereby when one wire sagging-preventing device is drawn toward the pulley via the wire by rotating the pulley in one direction, one of the slidable members of the other wire sagging-preventing device is moved away from the pulley, independently of said other wire sagging-preventing device, to prevent the loosening of the wire connected to said other wire sagging-preventing device.

3,892,229

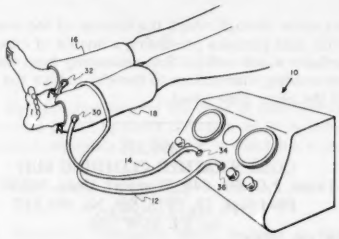
APPARATUS FOR AUGMENTING VENOUS BLOOD FLOW

Duane F. Taylor, 680 Winter St. S.E., Salem, Oreg. 97301; Richard C. Everett; Harry F. Everett, both of 6159 S.W. Fernbrook Cir., Lake Oswego, Oreg. 97034, and Norman C. Williams, Rt. 1, Box 134, West Linn, Oreg. 97068

Filed Dec. 6, 1973, Ser. No. 422,208

Int. Cl. A61h 1/00

U.S. Cl. 128—24 R **20 Claims**



1. An alternating leg compression control unit adapted to be coupled with a pair of pressure leggings, said unit comprising:

a. inlet port means adapted for coupling to a source of pressurized fluid;

b. a pair of outlet port means adapted for coupling to said respective leggings; and

c. control means for conducting said fluid from said inlet port means to said respective outlet port means in periodic flow increments alternating between said respective outlet port means, said control means including fluid-operated timing means for starting each said flow increment in a predetermined periodic sequence, said timing means having no electrically actuated components.

3,892,230

ORTHOPEDIC DEVICE FOR LOOSENING STIFFENED SHOULDER JOINT

Fredrick A. Baker, deceased, late of Falls Church, Va., and Virginia B. Baker, executor, 5900 Boston Dr., Falls Church, Va. 22041

Filed Sept. 18, 1974, Ser. No. 506,995

Int. Cl. A61h 1/02

U.S. Cl. 128—25 R **4 Claims**

1. An orthopedic device for exercising a stiffened shoulder joint by the unaffected arm comprising:

a rigid bar member for extending from the shoulder of the stiffened joint to a firm surface;

a padded member mounted on the inner end of said bar member for resting against said shoulder;

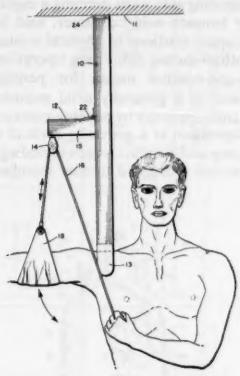
a support member mounted on said bar member substantially orthogonal thereto for extending outwardly in the plane of said shoulder;

pulley means on the surface of said support member for facing said shoulder;

a sling for supporting the upper arm adjacent said stiffened shoulder joint; and

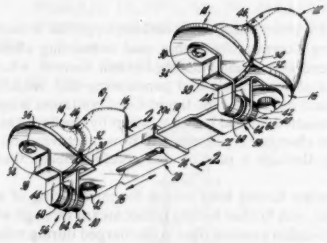
a flexible member attached to said sling and guided through said pulley, said flexible member having sufficient length to be reciprocated through said pulley by the unaffected

arm without twist on the unaffected arm or other members of the body, whereby a person having a shoulder



joint stiffened by disease may exercise the upper arm in the affected joint by merely moving the unaffected arm.

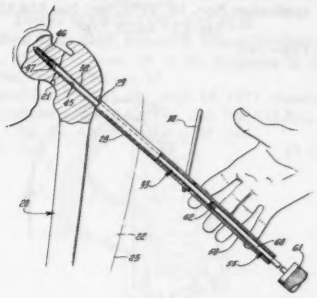
3,892,231
FOOT AND LEG CORRECTIONAL DEVICE PARTICULARLY FOR INFANTS
Dominick Tummillo, 22 Oak Dr., Upper Saddle River, N.J.
Filed June 6, 1974, Ser. No. 476,876
Int. Cl.[2] A61F *3/00*
U.S. Cl. 128—80 A **11 Claims**



1. A correctional shoe comprising a shoe rear heel portion and a shoe forward toe portion, said rear heel portion and said forward toe portion each including a sole part and a top body part over said sole part for receiving the shoe and bracket means connecting said forward toe part and said heel part permitting pivotal movement of said parts in respect to each other, a first bracket connected to the sole of said forward toe part, a second bracket connected to the sole of said rear heel part, and universal means interconnecting said brackets permitting universal pivoting movement between said parts.

3,892,232
METHOD AND APPARATUS FOR PERFORMING PERCUTANEOUS BONE SURGERY
Alonzo J. Neufeld, 1650 Parway Dr., Glendale, Calif. 91206
Filed Sept. 24, 1973, Ser. No. 400,198
Int. Cl. A61f *5/00*
U.S. Cl. 128—92 EB **11 Claims**

1. For use in pin implant in bone structure, the combination of: an elongated tubular guide adapted to be inserted through a small diameter skin incision and positioned with its inner end in direct contact with the bone surface and its outer end extending outwardly from the skin surface, an implant pin of a length generally corresponding to the depth of a bore made by a drill bit, the pin embodying a threaded section and having tool interlock means at a rearward end, said pin being slidably



engaged within said guide with its rearward end directed outwardly, and a pin driver tool slidably engaged in said guide and comprising an elongated shaft embodying at a forward end means engaging the interlock means on the pin.

3,892,233
HIP NAIL
Gunnar W. Vestby, Eckersbergsgate 4, Oslo 2, Norway
Continuation of Ser. No. 266,373, June 26, 1972, abandoned. This application Jan. 9, 1974, Ser. No. 431,911
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 BA **2 Claims**

1. A hip nail adapted to be inserted into the femoral head of the bone, said nail comprising

an elongated hollow body having a given minimum diameter and having along a substantial part of its length a plurality of axially directed continuous radially projecting fins,

means for facilitating precutaneous intraosseous venography and for minimizing bone crushing upon nail introduction into bone and for minimizing the force necessary for introduction, said means including:

a longitudinal projection of each of said fins extending at least a distance corresponding to the minimum diameter of the nail body beyond the end of said body and having a cross-section corresponding generally in size, shape and radial position to the cross-section of its respective fin so that an open field of visibility exists between said projections when said nail is viewed from one side.

3,892,234

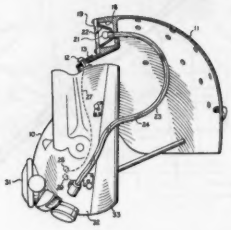
DIVER'S PRESSURIZED EQUIPMENT HOUSINGS

Richard F. Jones, Santa Barbara, Calif., assignor to General Aquadyne, Inc., Santa Barbara, Calif.

Continuation-in-part of Ser. No. 367,586, June 6, 1973, and a continuation of Ser. No. 456,204, March 29, 1974. This application Nov. 18, 1974, Ser. No. 524,535

Int. Cl.[2] A62B 7/04

U.S. Cl. 128—142 8 Claims



1. Diving equipment of the type where the gas pressure breathed by the diver is substantially the same as the hydrostatic pressure of the water depth at which he operates, comprising:

a. means for providing an air space for the face of a diver at the region of at least one of his mouth and nose;

b. an air supply means connected to the air space means, said air supply means including pressure regulating means for regulating the pressure delivered to the air space means to be always within about 1 or 2 pounds of the hydrostatic pressure;

c. a windowed watertight housing lightly constructed to withstand only about said 1 or 2 pounds per square inch pressure;

d. means for securing the housing to the diver's body;

e. a conduit connecting the interior of the housing to the interior of the air space means; and

f. a light utilizing apparatus disposed in the windowed housing, whereby said lightly constructed housing is subject only to the differential pressure determined by the difference between the hydrostatic pressure and the internal pressure on the housing, and whereby the diver's hands are free and relieved of the necessity to hold the housing.

3,892,235

MULTI-USE INHALATION THERAPY APPARATUS

Edward Van Amerongen, Wilmette; Glenn Lee Beall, Gurnee; John Charles Clark, Zion, and Richard Joseph Reilly, Deerfield, all of Ill., assignors to Respiratory Care, Inc., Arlington Heights, Ill.

Division of Ser. No. 166,417, July 27, 1971, Pat. No. 3,804,280. This application July 31, 1973, Ser. No. 384,267

Int. Cl. A61m 15/00

U.S. Cl. 128—194 9 Claims

1. Nebulizing apparatus adapted particularly for use in ultrasonic-vibration-induced nebulizing inhalation therapy systems, said nebulizing apparatus comprising in combination:

a. a liquid container having a body defining a nebulizer reservoir chamber for and containing a predetermined amount of liquid;

b. said container body having an upper portion with at least one neck portion and a lower portion with a generally planar bottom provided with a pronounced recess therein extending longitudinally toward said upper portion;

c. a duct integral with said body generally centrally within said recess, and communicating with a lower interior part of said reservoir chamber and the liquid therein;

d. said duct having an axis and extending axially downward, and terminating in a closed breachable seal defining an integral penetratable sterile barrier for aseptically isolating the liquid in said chamber;

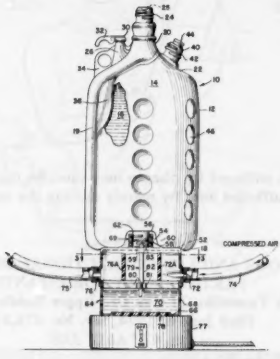
e. a container-supporting housing having a bottom and upwardly extending side walls defining a cup-like nebulizing chamber beneath said container, said housing side walls having upper portions in physical contact with said container bottom during nebulizing operation;

f. penetrating-and-conduit means for penetrating said breachable seal in a generally axial manner, and connected with and supported by housing-connected support means for disposition in a generally vertical manner;

g. said penetrating-and-conduit means including a generally vertically oriented elongated tubular member having an upper seal-penetrating end, and an opposite lower end extending downwardly within said nebulizing chamber but spaced above said housing bottom thereof, whereby

h. said seal-penetrating end penetrating said breachable seal of said duct when the liquid-filled container is operatively mounted on said housing, whereby the liquid in said reservoir chamber is permitted to flow by gravity into said housing; through a part of said conduit means thereof; and

i. said housing having inlet means for introducing of a gas thereinto, and further having outlet means through which moisture-laden gaseous fluid is discharged during nebulizing operation.



3,892,236

APPARATUS FOR FILTRATION-LEUKOPHERESIS FOR SEPARATION AND CONCENTRATION OF HUMAN GRANULOCYTES

Isaac Djerassi, 2034 Delancey Pl., Philadelphia, Pa. 19103

Filed Apr. 2, 1973, Ser. No. 346,729The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.

Int. Cl. A61m 01/03

U.S. Cl. 128—214 R 8 Claims

1. Apparatus for filtration-leukopheresis comprising

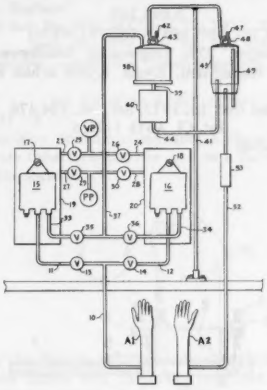
a venous blood supply connection adapted to be connected to a donor,

a venous blood return connection adapted to be connected to the donor,

a leukocyte separating and retaining filter interposed in series with said connections and in fluid communication therewith for extracting leukocytes from blood passing therethrough,

a permanently vented receptacle in continuous communication with the atmosphere interposed in series between said filter and said return connection and in fluid communication therewith,

fixedly mounted detachable supporting members for said filter and said vented receptacle, and



power driven pump means upstream of said receptacle for continuously delivering blood from said supply connection to and through said filter and to said vented receptacle.

3,892,237

SELF-INJECTING SYRINGE

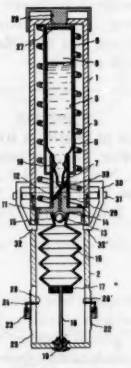
Maurice Steiner, 40 bis avenue de Suffren, 75015 Paris, France

Filed Apr. 17, 1974, Ser. No. 461,605

Claims priority, application France, July 17, 1973, 73.26167

Int. Cl. A61m *5/24*

U.S. Cl. 128—216 **2 Claims**



1. An injecting device comprising a protecting casing, and inside this casing an empty plastics collapsible ampoule, a needle having a canal and fitted onto said empty ampoule, said needle canal opening into said empty ampoule, a glass ampoule sealed inside the casing and containing the liquid to be injected, means to break the end of the glass ampoule, means to provide for the filling of the collapsible ampoule with the liquid coming out of the glass ampoule, mechanical resilient means for both propelling said needle through said casing and ejecting through said needle the liquid of the collapsible ampoule by compressing said collapsible ampoule after it has been filled up, compressioning means for said mechanical resilient means, and outside said casing, means for releasing said resilient means.

3,892,238

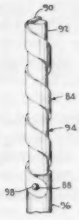
DRUG SUPPORTING ANCHOR

John A. Banford, Lake Bluff; Ronald H. Moyer, McHenry, and Russell E. Mauer, Gurnee, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 181,007, Sept. 16, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 433,062

Int. Cl. A61m *31/00;* **A61f** *5/46*

U.S. Cl. 128—260 **17 Claims**



11. In combination, an insertion rod having a distal end and a proximal end, an anchor for supporting a drug including an elongate strip of flexible, resilient material spirally wound around said insertion rod to form a plurality of spaced coils having flat peripheral drug supporting surfaces, said strip of material engaging said distal and proximal ends to have a spiral configuration, and a slow release drug material carried on said flat peripheral drug supporting surfaces.

3,892,239

QUINOHYDROTHERMIC BODY COVERING ELEMENT

Jose Ma Masso Remiro, Ganduxer, 10-12 5° 1ª, Barcelona, Spain

Filed Nov. 13, 1973, Ser. No. 415,396

Claims priority, application Spain, Nov. 23, 1972, 196410; Oct. 2, 1973, 195808

Int. Cl. A61f *7/00*

U.S. Cl. 128—293 **6 Claims**

1. A quinohydrothermic body covering element comprising: a stratified element including:

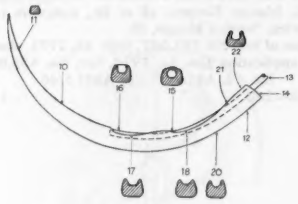
a thin layer of rubber material having opposite surfaces, said rubber layer being non-porous and highly elastic, said rubber layer having a thickness progressively decreasing from a maximum at one dimensional extremity thereof to a minimum at a second opposite dimensional extremity thereof; and

a layer of knitted fabric material having opposite surfaces, one of which covers one of said surfaces of said rubber layer, the other of said surfaces of said fabric layer having extending therefrom a plurality of substantially parallel ribs, said ribs forming channel means for the circulation of air longitudinally of said element when said element is positioned on the person of a user.

3,892,240
SURGICAL NEEDLE APPARATUS

Charles Lanier Park, 1904 E. Second St., Sanford, Fla. 32771

Filed Mar. 21, 1974, Ser. No. 453,328
Int. Cl.[2] A61B 17/06
U.S. Cl. 128—339 3 Claims

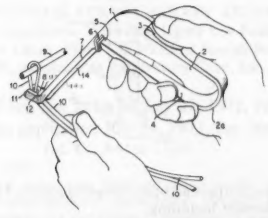


1. An atraumatic surgical needle comprising:
an elongated arcuate body having a tapered end portion and a blunt end portion, said elongated body having a first groove therein extending from the tip of the blunt end portion a predetermined distance parallel the elongated axis of said body;
said elongated body having a bore therein extending from the opposite end of said first groove from said blunt end portion tip a predetermined distance parallel to the elongated axis of said body;
said elongated body having a second groove therein extending from the opposite end of said bore from that end abutting the first groove a predetermined distance parallel to the elongated axis of said elongated body; and
a portion of said elongated body first groove forming a frictionally engaging snap slot for engaging suture material whereby suture material may be inserted into said bore through the end facing said first groove, passed through said bore into said second groove, and snapped into said frictionally engaging snap slot.

3,892,241
DISPOSABLE PLASTIC BLOOD VESSEL CLAMP

Harry H. Leveen, 800 Poly Pl., Brooklyn, N.Y. 11209

Filed Apr. 9, 1973, Ser. No. 349,110
Int. Cl. A61b 17/12
U.S. Cl. 128—325 2 Claims

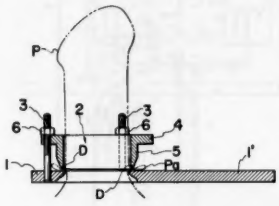


1. An adjustable blood vessel clamp which comprises:
a. a base frame having, thereon, on one end a handle means connected by a single extender arm terminated by a bifurcated foot on the opposite end and
b. a stretchable filament attachment means interposed between said handle means and said bifurcated foot,
c. the said filament attachment means of (*b*) being a clamp whose jaws are releasable by compression of the handle means and
d. a stretchable filament member attached at both ends to the said filament attachment clamp and having its median point pass through the bifurcated foot of the device in substantial attachment thereto.

3,892,242
CIRCUMCISION INSTRUMENT

Michitaro Honjyo, 279, Ougimachi, Imadegawa-sagaru, Teramachi, Kamigyoku, Kyoto, Kyoto urban Prefecture, Japan

Filed Dec. 13, 1973, Ser. No. 424,476
Int. Cl. A61b 17/326
U.S. Cl. 128—346 3 Claims

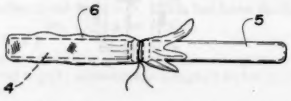


1. A circumcision instrument comprising:
a base plate having a circular opening;
a tubular member and means mounting said tubular member to said base plate with the axis of said tubular member aligned with the center of said circular opening;
said tubular member having a flange portion adjacent said base plate around said circular opening whereby a penis can be inserted through said opening and said tube with a portion of the skin of the penis disposed between said flange portion of said tube and said base plate; and
said mounting means being operable to draw said tube toward said base plate to thereby crush the skin disposed between said flange portion and said base plate; and
said mounting means further comprising means permitting the tubular member to be drawn toward said base plate to provide varying degrees of compression between said tubular member and said base plate at different portions around said flange portion.

3,892,243
METHOD OF MAKING A BABY PACIFIER

Harold E. Bell, Decatur, Ga., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 21, 1974, Ser. No. 481,682
Int. Cl. A61j 17/00
U.S. Cl. 128—359 2 Claims



1. A method of making a baby pacifier, comprising the steps of
impregnating gauze with one of the group consisting of margarine and butter;
applying one of the group consisting of honey and sugar to the impregnated gauze; and
affixing the impregnated gauze to a handle supported ring portion.

3,892,244
SMOKING MIXTURES

Robert Craig Anderson, and Alain Calder, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

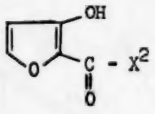
Division of Ser. No. 308,743, Nov. 22, 1972. This application Sept. 20, 1974, Ser. No. 507,935

Claims priority, application United Kingdom, Dec. 15, 1971, 58230/71

Int. Cl. A24b *15/00, 15/04*

U.S. Cl. 131—2 **6 Claims**

1. A smoking mixture comprising a thermally degraded carbohydrate tobacco substitute and, as a flavourant, a compound of the formula



wherein X^2 represents an alkyl radical preferably of one to four carbon atoms said thermally degraded carbohydrate being obtained by subjecting a carbohydrate material to a catalysed degradation process at a temperature of at least 100°C until the weight of the degraded material is approximately 90% or less of the dry weight of the original carbohydrate.

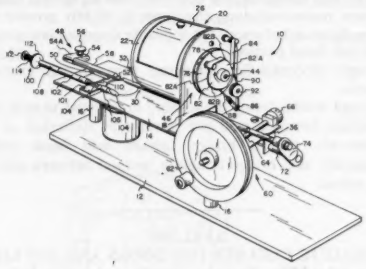
3,892,245
CIGARETTE MACHINE

Clarence M. Asbill, Jr., 2627 Dover Rd., Raleigh, N.C. 28526

Filed Oct. 11, 1973, Ser. No. 405,687

Int. Cl. A24c *5/02, 5/32, 5/42*

U.S. Cl. 131—75 **5 Claims**



1. A cigarette machine adapted to fill individual cigarette paper wrapper tubes with shredded tobacco, said cigarette machine comprising:

a. a frame structure;

b. a filler tube mounted on said frame structure and open at one end, said open end being adapted to receive individual cigarette paper wrapper tubes;

c. a tobacco storage unit mounted on said frame structure and operative to feed shredded tobacco therefrom into said filler tube;

d. plunger means reciprocally mounted within said filler tube for moving shredded tobacco through said filler tube into the respective cigarette paper wrapper tube disposed about the open end thereof;

e. drive means for reciprocally driving said plunger means and including an actuation wheel fixed to a drive shaft, a crank assembly operatively connected to said drive shaft, a slidably mounted slide operatively connected to said crank assembly and movable fore-and-aft in response to the actuation of said crank assembly; and a connecting rod assembly interconnected between said slide and said plunger means for reciprocally driving said plunger means as said slide is moved fore-and-aftly;

f. a density control mechanism disposed adjacent said filler tube and including, a frictional holder mounted outwardly of the open end of said filler tube and including an opening formed therein, an elongated member means frictionally held and slidably mounted within the opening of said frictional holder and projecting therefrom for engagement with the outer end of the respective cigarette wrapper tube associated with said filler tube for movably yielding with the respective cigarette wrapper tube in response to shredded tobacco being compacted therein, and means associated with said frictional holder for adjusting and varying the frictional holding force being applied to said elongated member means; and

g. agitating means rotatively mounted within said tobacco storage unit and operative to agitate and mix the shredded tobacco therein during the operation of the cigarette machine; a ratchet drive assembly operatively connected to said agitating means; a bell crank pivotably mounted in alignment with said slide of said plunger drive means and engageable therewith as said slide moves fore-and-aftly, and a cable drive operatively interconnected between said bell crank and said ratchet drive assembly for driving said ratchet drive assembly and consequently said agitating means in response to the engagement of said slide with said bell crank.

3,892,246
METHOD AND APPARATUS FOR DOING AFRO HAIRDOS

Robert Woodard, 5003 Wynnefield Ave., Philadelphia, Pa. 19131

Filed Apr. 4, 1974, Ser. No. 457,749

Int. Cl.² A45D *7/00*

U.S. Cl. 132—7 **1 Claim**

1. A process for styling curly hair comprising the steps of:

a. wetting the hair;

b. parting the hair and combing it flat against the scalp;

c. stretching a stretchable, imperforate cap over all of the hair and adjusting the cap to hold all of the hair in place flat against the scalp;

d. drying the hair with the cap in place on the scalp;

e. removing the cap;

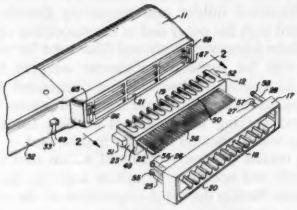
f. combing out the hair so that it stands straight out from the scalp;

g. placing a highly elongated comb against the scalp and lifting it straight away from the scalp through the hair and repeating the last step over the entire scalp to give the hair an Afro style.

3,892,247
ELECTROSTATIC COMB

Margaret J. Andersen, 3314 N. Lake Shore Dr., Chicago, Ill. 60657

Filed May 13, 1974, Ser. No. 469,318
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 R **21 Claims**



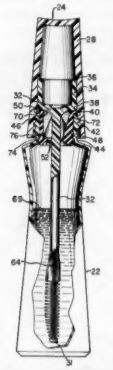
1. An electrostatic comb assembly having a comb with a plurality of teeth, an elongated electrically conductive bar mounted on one side of said comb and positioned substantially transverse to the teeth of said comb, and a non-absorbent dielectric block positioned between said bar and the comb, the block having an elongated edge substantially parallel to the bar and spaced from the comb and the bar, wherein the improvement comprises,

an electrically conductive material having a recognizable resistance forming said bar.

3,892,248
EYELASH-COSMETIC APPLICATOR

Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

Filed Mar. 15, 1974, Ser. No. 451,649
Int. Cl.² A45D *40/26*
U.S. Cl. 132—88.7 **14 Claims**



1. An eyelash-cosmetic applicator comprising:

a. a shaft;

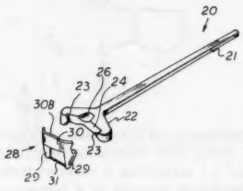
b. handle means attached to one end of said shaft; and

c. an applicator head with a plurality of flat, substantially triangular projections each extending to a vertex at most one centimeter from said shaft, the triangular surfaces of said projections being normal to the axis of said shaft, at least three of said projections spaced circumferentially about said shaft in a coplanar arrangement forming a regular geometric pattern, said pattern repeated axially starting from the shaft end opposite said handle means with corresponding vertices of adjacent patterns being coplanar with said axis, adjacent sides of said corresponding coplanar projections defining smooth, discontinuous channels along said shaft, said adjacent patterns leaving axial spaces therebetween of not less than 0.25 millimeter.

3,892,249
DENTAL FLOSS DEVICE

Franklin R. Jones, 80 Gorham Rd., Fairfield, Conn. 06430, and Robert D. Ferguson, 55 Tanglewood Rd., Trumbull, Conn. 06611

Filed Apr. 24, 1974, Ser. No. 463,455
Int. Cl. A61c *15/00*
U.S. Cl. 132—89 **14 Claims**



1. A dental device comprising

a handle means,

means defining a head portion connected to said handle means,

said head portion having oppositely disposed jaw portions, a readily disposable dental floss holder adapted to be detachably connected to said head portion,

said floss holder including opposed extension arms and a flexible bridge interconnecting said extension arms,

said bridge being slightly convexly curved so that the distance measured along the curve is slightly greater than the distance between said oppositly disposed jaw portions of said head portion,

a length of dental floss extended between said extension arms,

and said holder being detachably connected to said head portion between said jaw portion by deflexion of said convexly curved bridge toward said head portion whereby said bridge is tightly wedged between said jaw portions.

3,892,250
HYDRAULIC CLEANER FOR DOORS AND THE LIKE

Stephen John Miko, Toronto, Canada, assignor to Industrial High Pressure Systems Inc., Gravenhurst, Canada

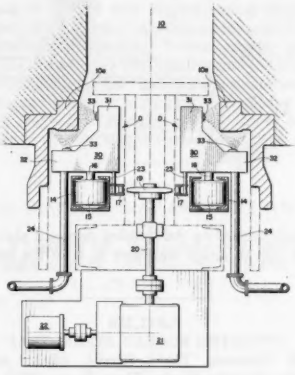
Filed July 2, 1973, Ser. No. 375,951
Claims priority, application Canada, Aug. 11, 1972, 149195
Int. Cl. B08b *3/02;* **C10b** *43/08*
U.S. Cl. 134—168 R **9 Claims**

1. Apparatus for cleaning divergent adjoining surfaces of doors, door jambs and the like, such as doors and door jambs for ovens and the like and adapted to be mounted on movable support means for moving from place to place whereby to align said apparatus for use on a particular location said apparatus comprising;

hoist means vertically movable in registration with a said door or door jamb between upper and lower positions, whereby to effectively traverse the vertical extent of said door or door jamb;

water jet nozzle means mounted on said hoist means and oriented to direct the jets emitted therefrom onto said divergent surfaces and moving in unison with said hoist means whereby to effectively traverse the vertical extent of said divergent surfaces of a said door or door jamb during said upward and downward movement of said

hoist apparatus, said jet nozzle means including at least two jet nozzles mounted and oriented in different directions so as to direct jets simultaneously in two directions onto at least two said divergent surfaces; means for traversing said nozzle means from side to side across said



door or door jamb, adjacent the upper and lower limits thereon whereby to effectively traverse the horizontal extent of said divergent surfaces, and,

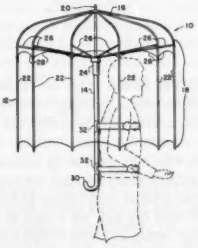
pump means, connected to said nozzle means at least in part by movable hose connection means.

3,892,251

COLLAPSIBLE UMBRELLA WITH RETRACTABLE FASTENING MEANS

James R. Warfield, 242-½ Suttenfield, Fort Wayne, Ind. 46806

Filed Mar. 8, 1974, Ser. No. 450,078
Int. Cl. A45b *11/02*
U.S. Cl. 135—20 R **10 Claims**



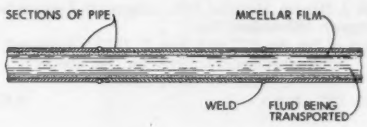
1. An umbrella comprising a canopy, an elongated handle connected to the canopy, said canopy having top and side portions, said canopy being collapsible from an expanded position in which said canopy side portions surround said handle and the head and shoulders of a person using the umbrella into a collapsed position in which said canopy overlays said handle, a pair of reels journaled for rotation in said handle, said reels being spaced apart, a pair of flexible straps connected to and wrapped on each of said reels, each of said straps having a distal end, means on said straps adjacent their distal ends for removably securing said pair together, and means for urging said reels to rotate and wrap said straps thereon.

3,892,252

MICELLAR SYSTEMS AID IN PIPELINING VISCOUS FLUIDS

Fred H. Poettmann, Findlay, Ohio, assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 18, 1972, Ser. No. 316,188
Int. Cl. F17d *1/16*
U.S. Cl. 137—13 **7 Claims**



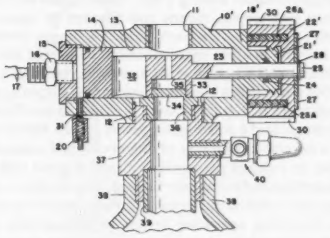
1. A method for increasing flow capacity of pipelines for transport of fluids, said method comprising introducing a micellar system into the fluid flow of such a pipeline at a point near the periphery of said pipeline to form a self-sustaining, substantially continuous, adhering film, said micellar system comprising surfactant, hydrocarbon, and water.

3,892,253

SHEAR VALVE WITH FRANGIBLE FITTING

George Salvador Covarrubias, La Puente, Calif., assignor to C. B. F. Systems Inc., Covina, Calif.

Filed July 20, 1973, Ser. No. 380,946The portion of the term of this patent subsequent to Sept. 11, 1990, has been disclaimed.
Int. Cl. F16k *13/06;* **B67b** *7/00*
U.S. Cl. 137—68 **15 Claims**



1. A shear valve for opening a pressurized conduit comprising:

a. a housing including a bore for enclosing valve components, and entrance port, and an exit port intersecting the housing bore;

b. an elongated valve member movably positioned within the bore and including a piston, a shear tool, a pilot pin, and a portion formed with a cylindrical hole whose axis is transversely aligned with the bore axis and adapted to register with said ports;

c. a plug closing one end of the bore including an explosive cartridge for creating pressure within the bore for moving the piston;

d. a cylinder head closing the other end of the bore formed with a central hole therein for supporting the pilot pin;

e. a threaded nut attached to the cylinder head and coupled to said valve member for moving same and adapted to be unscrewed from the head when the valve is to be opened by manual control, and means for moving the elongated valve member when released by said nut, and

f. a frangible plug secured in the entrance port and formed with a closure disc for sealing fluid in the entrance port when the valve is unactuated and for releasing fluid when the valve is actuated and the shear tool removes the disc from the frangible plug;

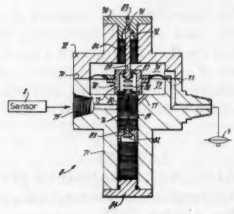
g. and a bleeder hole in communication with the atmosphere and said bore contiguous to said plug whereby when said piston moves slightly atmospheric air will be drawn into said bore.

3,892,254

DIAPHRAGM VALVE APPARATUS AND CONTROL SYSTEMS EMPLOYING SUCH VALVE APPARATUS

Adolph J. Hilgert, Mequon, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Division of Ser. No. 222,603, Feb. 1, 1972, abandoned. This application Oct. 12, 1973, Ser. No. 405,847
Int. Cl. G05d *16/06*
U.S. Cl. 137—116.3 **8 Claims**



1. A diaphragm valve apparatus comprising a valve body having a pair of chambers separated by a common flexible diaphragm member, an inlet passageway means terminating in a first of said pair of chambers, control passageway means connecting said first chamber to said second chamber, said diaphragm member having a first valve means associated with said inlet passageway means and adapted to open and close said inlet passageway means, said diaphragm member resiliently holding the first valve means to close said inlet passageway means and responsive to a preselected inlet pressure in said inlet passageway means to move said diaphragm member and said valve means to transmit pressure to said first chamber and through said control passageway means between the first and the second of said pair of chambers, said second chamber includes an exhaust passageway means aligned with the valve means and spaced outwardly thereof, a secondary valve means closing said control passageway means, said secondary valve means including operating means to sequentially close said exhaust passageway means and to open said secondary valve means in response to predetermined movement of said first valve means to open said inlet passageway means, and an outlet passageway means interconnected to the second chamber.

3,892,255

INLET ORIFICE DEVICE TO CONTROL THRUPUT FLOW FOR PRESSURE REGULATORS

Dwight N. Johnson, Anaheim, Calif., assignor to The Singer Company, New York, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,294
Int. Cl. G05d *16/18*
U.S. Cl. 137—116.5 **8 Claims**

1. A pressure regulator operative responsive to inlet pressure and outlet pressure comprising:

a. a housing having an inlet, an outlet in communication with the inlet and a chamber formed on the outlet side,

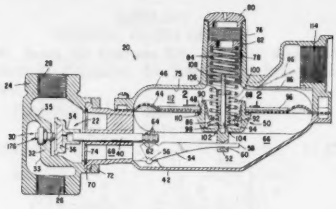
b. a flexible diaphragm having one side in communication with the outlet connected in the chamber,

c. a valve means having a valve operatively actuated by the diaphragm to shift the valve toward or away from the inlet responsive to the pressure in the chamber,

d. a control means movably connected in the housing to limit the thruput flow from the inlet to the outlet responsive to the inlet pressure,

e. the control means includes a body having an orifice therethrough to communicate the inlet and the outlet,

f. an inlet piston carried by the body to urge the body to move towards the outlet responsive to increases in inlet pressure, and



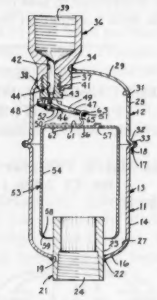
g. a nozzle carried by the housing disposed about the inlet piston and to coact therewith to limit the inlet thruput flow.

3,892,256

INVERTED BUCKET STEAM TRAP

Ronald D. Schlesch, Three Rivers, Mich., assignor to Armstrong Machine Works, Three Rivers, Mich.

Filed Nov. 27, 1973, Ser. No. 419,438
Int. Cl. F16t *1/30*
U.S. Cl. 137—185 **8 Claims**



1. In an inverted bucket steam trap, comprising a casing having side, top and bottom walls defining a water-tight generally cylindrical chamber, a vertically movable inverted bucket substantially coaxially disposed in said chamber and having a cylindrical vertical wall which is open at its bottom and which has a wall at its top, a substantially coaxial inlet for steam and condensate in the bottom wall of said casing and communicating with the interior of said bucket, an outlet in the top wall of said casing, said outlet being laterally offset from the longitudinal axis of said chamber and having a valve seat thereon, a valve member movably disposed in said chamber and adapted to be moved into and out of sealing engagement with said valve seat, and operating lever means disposed in said chamber and extending laterally from around the center of the top wall of said bucket to a position below said valve seat and having said valve member coupled thereto so that the raising and lowering of said bucket in said chamber moves said valve member toward and away from said valve seat, the improvement which comprises:

said casing consists of first and second casing sections, each of said casing sections being made of a single metal sheet and having the shape of a cylindrical cup of uniform thin wall thickness, the first casing section being open at its top and closed at its bottom by a downwardly bowed

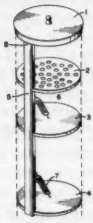
spherical-segment-shaped bottom wall and having a coaxial central first opening extending through the vertex of said bottom wall, the second casing section being open at its bottom and closed at its top by an upwardly bowed spherical-segment-shaped top wall whose vertex is coaxial with the vertex of said bottom wall, said top wall having a second opening extending therethrough at a location laterally offset from the vertex of said top wall, the bottom end of said second casing section being welded to the top end of said first casing section to define said chamber; a separately formed tubular inlet fitting extending through said first opening into the lower end of said chamber to provide said inlet for steam and condensate; a separately formed tubular outlet fitting extending through said second opening into the upper end of said chamber to provide said outlet and said valve seat.

3,892,257

VERTICAL SANITARY TRAP ASSEMBLY FOR DRAIN PIPES

Yee C. Zia, 6 Sheffield Dr., Willingboro, N.J. 08046

Filed Sept. 20, 1973, Ser. No. 399,256
Int. Cl. F16k *15/03*
U.S. Cl. 137—247 **5 Claims**



1. A vertical sanitary trap assembly including a plug, a strainer, and an upper and a lower disc duly spaced from each other to form a water trap inside a drain pipe of the same diameter, all parallelly, perpendicularly and tangentially attached to a rod at a point on their outermost circumference in such a way as to enable the bottom part of said plug to revolve around said point in a level plane, said strainer being securely attached to said point yet easily snapped off and on, and each of two said discs so attached being additionally held over its center area by a spring-operated arm stemmed from the rod thereby permitting either disc only a downward movement under pressure; the entire assembly must fit inside a drain pipe in a watertight manner, yet allow itself to be detached and pulled out for cleaning, repairing or replacement.

3,892,258

HIGH PRESSURE SAFETY VALVE

Fred W. Hendrick, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 29, 1973, Ser. No. 420,178
Int. Cl. F16k *17/02*
U.S. Cl. 137—461 **9 Claims**

1. A high pressure safety valve comprising

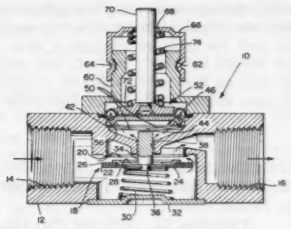
a casing having inlet means, outlet means and a flow passage therebetween;

valve means disposed in said flow passage to control flow therethrough;

snap-acting operator means movable between first and second states to control opening and closing of said valve means, respectively;

pressure sensing means exposed to pressure in said flow passage and controlling said operator means, said pressure sensing means being movable in response to the sensing of a predetermined high pressure to place said operator means in said second state and close said valve means whereby said valve means prevents flow through said casing under predetermined high pressure conditions;

said operator means including a snap-acting disc, said snap-acting disc having an outer rim means supported on said



casing and a central portion formed of spaced leg means to permit flow therethrough; and

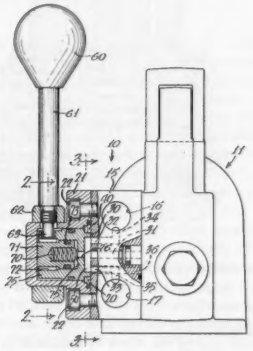
said pressure sensing means including a fulcrum member disposed in engagement with said central portion throughout movement of said pressure sensing means and said operator means between its first and second states.

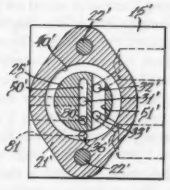
3,892,259

ROTARY CONTROL VALVE

Samuel B. McClocklin, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.

Filed Jan. 16, 1974, Ser. No. 433,799
Int. Cl. F16k *11/02*; **F15b** *13/04*
U.S. Cl. 137—625.21 **10 Claims**





1. A rotary control valve having a body and a valve member with opposing generally planar contacting surfaces, means mounting the valve member for rotation about a central axis normal to said surfaces, a plurality of ports in said body opening to said surface thereof including a pressure port concentric with said axis, an annular space around the periphery of said

valve body, a return port connecting with said annular space, a pair of control ports, said valve member having a first fluid passage groove opening to the body surface and extending through and with ends equidistant from said central axis to connect said pressure port with one or the other of said control ports, a pressure chamber in said valve member having a pressure responsive area, a reaction member in said pressure chamber, a passage connecting said groove and said pressure chamber whereby fluid pressure acting against the reaction member and the pressure responsive area urges the valve member toward said body surface, and said valve member having a second fluid passage groove to connect one of said control ports to the annular space and to the return port.

3,892,260

ELECTRO-HYDRAULIC SERVO-DISTRIBUTOR

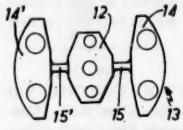
Rene Lucien, 56, Boulevard Maillot, 92200 Neuilly sur la Seine, France

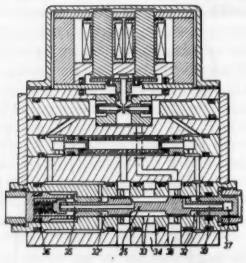
Filed Dec. 27, 1973, Ser. No. 428,766

Claims priority, application France, Dec. 29, 1972, 72.47007

Int. Cl. F15c *3/02*; **F16k** *11/07*; **G05d** *16/20*

U.S. Cl. 137—625.62 **6 Claims**





1. An electro-hydraulic servo-distributor comprising a primary or pilot stage including a drive means constituted by a magnetic circuit which comprises two parallel polar cores, two rectilinear magnets parallel to said cores and connected magnetically to one end of the cores by means of at least one metal plate, two control coils wound around said cores, a movable metal plate assembly arranged opposite the other ends of the polar cores, forming therewith equal air gaps, the arrangement of the different components of the magnetic circuit being such that the flux produced by the control coils and the flux of one of the magnets pass across the corresponding air gap in the same direction, while the flux produced by the control coils and the flux produced by the other magnet pass across the other air gap in opposite directions, a support member provided with a central part on which is fixed the movable plate assembly and two lateral torsion rods which are each terminated by a lateral portion engaged in the fixed structure of the servo-distributor, the support member also carrying in its central part a hydraulic closure member which is substantially perpendicular to the plate assembly and which is intended to close, according to the direction of magnetic turning moment to which the movable plate assembly is subjected, one or the other of two jets which are supplied with hydraulic fluid, by a secondary or hydraulic stage controlling flow-rate or controlling pressure.

3,892,261

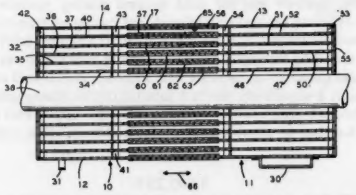
INSULATING CONDUIT

Terry E. Hoeman, Lancaster, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,931

Int. Cl. F16l *59/08*

U.S. Cl. 138—149 **2 Claims**



1. An insulating element having at least two relatively movable portions comprising a pair of abutting inner cases, a pair of abutting outer cases spaced from said respective inner cases, a plurality of keys for separating each of said inner cases from said respective outer cases, a plurality of proximately abutting pairs of spaced highly reflective metal sheets said proximately abutting pairs of sheets being supported by said keys and interposed between said inner and outer cases, a plurality of splice piece sets, each of said sets overlapping a respective pair of proximately abutting cases and sheets, said sets being secured to a respective one of said cases and sheets, the other of said proximately abutting cases and sheets in each of said associated pairs being slidably received between said respective splice pieces in order to obstruct convective heat flow therethrough.

3,892,262

SLIDE-FASTENER STRINGER HALF WITH WOVEN-IN COUPLING ELEMENT AND METHOD OF MAKING SAME

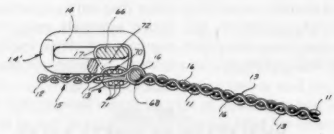
Julius Dahlmann, Sprockhovel, and Gunter Volter, Suppertal, both of Germany, assignors to Opti-Holding AG, Glarus, Switzerland

Filed Jan. 25, 1974, Ser. No. 436,628

Claims priority, application Germany, Jan. 27, 1973, 2304011; July 5, 1973, 2334242

Int. Cl. A44b *19/42*

U.S. Cl. 139—384 B **13 Claims**

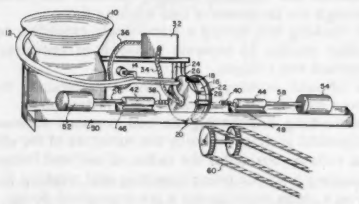


1. A slide-fastener stringer half comprising:
- a plurality of primary parallel warp filaments forming a primary band and a plurality of secondary warp filaments forming a secondary band extending longitudinally alongside said primary band and forming therewith an elongated strip;
- a continuous synthetic-resin coupling element extending longitudinally in said strip between said bands;
- a first weft filament woven back and forth across the full width of said strip between said warp filaments; and
- a second weft filament woven back and forth across said primary band and having at the longitudinal edge of said primary band turned toward said secondary band a plurality of bights looped around said coupling element and having at the opposite longitudinal edge of said primary band a plurality of knitted-together bights.

3,892,263
AXIAL COMPONENT LEAD STRAIGHTENER

Lewis P. Martin, and Lynn E. Trent, both of Huntsville, Ala., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 13, 1974, Ser. No. 505,807
Int. Cl. B21f *1/02*
U.S. Cl. 140—147 **10 Claims**



1. Apparatus for straightening the leads extending longitudinally from axial leaded electrical components, said apparatus comprising

first and second closed helical lead straightening elements disposed on a common longitudinal axis,

means for driving said first and second lead straightening elements in counter-rotation with respect to one another, means for conveying said electrical components into axial alignment with said first and second lead straightening elements and retaining said components in axial translation,

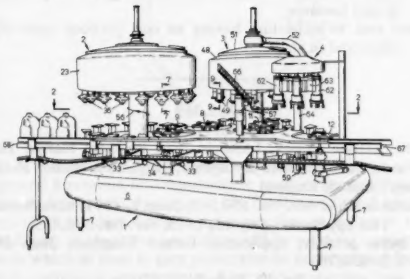
means for driving said first and second lead straightening elements along said longitudinal axis such that the ends thereof engage said component leads whereby said leads are drawn into said straightening elements due to the rotation thereof, and

means for axially withdrawing said lead straightening elements from said electrical components to thereby straighten said leads and release said components.

3,892,264
METHOD AND APPARATUS FOR FILLING BOTTLES

Chester W. Held, Bayside, Wis., assignor to Federal Manufacturing Company, Milwaukee, Wis.

Filed Oct. 10, 1973, Ser. No. 404,938
Int. Cl. B65b *3/04*
U.S. Cl. 141—5 **8 Claims**

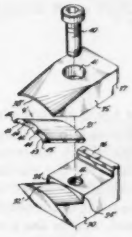


1. The method of filling open-mouthed receptacles with liquid, which comprises the steps of inserting a first liquid discharge nozzle into the mouth of the receptacle; advancing the receptacle and inserted nozzle along a first path of predetermined length; establishing liquid flow by gravity from said first nozzle into said receptacle at a rate which will initially fill said receptacle to less than its full content during said advancement thereof along said first path; terminating said gravity liquid flow; removing said first nozzle from and inserting a second nozzle into the mouth of said initially filled receptacle; advancing said initially filled receptacle and inserted second nozzle along a second path of predetermined length; and establishing vacuum assistsed liquid flow by gravity from said second nozzle into said initially filled receptacle at a rate which will complete filling of said receptacle to its full content during said advancement thereof along said second path.

3,892,265
CHIPPER BIT AND HOLDER

Stanley Donald Vanek, Seattle, Wash., assignor to Nicholson Manufacturing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 141,595, May 10, 1973, Pat. No. 3,757,839, which is a continuation-in-part of Ser. No. 883,038, Dec. 8, 1969, Pat. No. 3,661,192. This application Apr. 6, 1973, Ser. No. 348,858
Int. Cl. B27l *11/02*; **B27g** *13/00*
U.S. Cl. 144—230 **14 Claims**

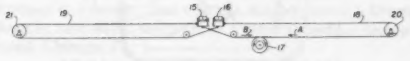


1. A bit for mounting in an aperture of a rotary chipping drum comprising an arcuate plate body approximately 90° in extent, of substantially uniform thickness over at least most of its area, having substantially parallel opposite edges, being substantially smoothly curved throughout its width between said opposite edges and having a cutting edge extending transversely of said opposite body edges and between said opposite body edges, said cutting edge having two bevels meeting in a ridge and forming adjoining concave cutting edges meeting in a cusp, and said plate body being discontinuous between said opposite edges opposite said cutting edge, enabling chips cut by said cutting edge to pass directly radially of said arcuate plate body through the aperture in the chipping drum.

3,892,266
METHOD AND MEANS FOR REMOVING SURFACE MATERIAL FROM TREES

Erich Puna, Gavle, Sweden, assignor to Brundell Och Jonsson AB, Gavle, Sweden

Filed Sept. 10, 1973, Ser. No. 395,856
Int. Cl. B27c *9/00*
U.S. Cl. 144—309 AC **54 Claims**



1. Apparatus for removing surface material from trees comprising:

a boom structure;

a pair of surface material removing heads slidably connected to said boom structure, said heads each carrying removal means for removal of surface material from a tree;

means coupled to said surface material removing heads for selectively causing said removal means of said heads to engage a tree; and

means for moving said heads along said boom in opposing directions, said heads simultaneously removing surface material from the upper and lower portions of the tree.

3,892,267

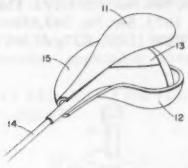
GOLF CLUB COVER

Emile L. Bibeau, 5 Colony Way, Nashua, N.H. 03060

Continuation-in-part of Ser. No. 368,851, June 11, 1973, abandoned. This application Aug. 9, 1974, Ser. No. 496,081

Int. Cl. A63b *57/00*

U.S. Cl. 150—52 G **6 Claims**



6. In a cover for the wood of a golf club, a cover of a molded plastic generally conforming to the shape of said wood and the bottom portion of the shank thereto, said cover generally conforming to the shape of the particular wood to be contained therein and being composed of two cover halves mating on a line following the front of the shank over the mid-portion of the top of said wood, across the toe to the mid-portion of the heel and thence up the back of the shank, said cover halves being pivotedly joined at the back of the shank portion by a finger operable pop-together ball and socket hinge joint, said hinge joint including two rearwardly directed finger clasps extending over and covering said hinge joint, said finger clasps being spread apart when said cover is in the closed position and serving as lever arms to open said cover about said hinge joint as a fulcrum, one half of said hinge joint and a clasp being of the same material and being integrally molded into each of said cover halves.

3,892,268

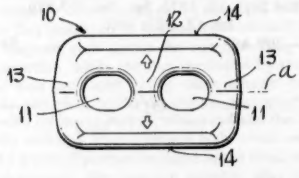
PROTECTIVE TIRE AND TRACTION CHAIN FOR TIRE-QUIPPED SERVICE VEHICLES

Heinz Asbeck, Markusstrasse 42, 46 Dortmund-Syburg, Germany

Filed Jan. 24, 1972, Ser. No. 220,264

Int. Cl. B60c *27/06*

U.S. Cl. 152—172 **4 Claims**



1. A protective tire and traction chain combination adapted for use on tire-equipped vehicles comprising of:

a plurality of generally rectangularly shaped working links, having a length and width greater than the thickness thereof,

each of said working links being formed with opposed working surfaces along the longitudinal edges thereof,

the thickness of the respective working links progressively increasing from a horizontal center line outwardly toward the respective working surfaces thereof,

the two opposed working surfaces of the working links having substantially the same width,

said working links each having a pair of apertures disposed between the opposed working surfaces and extending through the thickness of said working links,

each working link having a transversely extending central bridge portion to separate said pair of apertures, and opposed end bridges,

each of said working links being symmetrically formed about its respective horizontal and vertical axes,

each working link having its end portions substantially ellipsoidal in shape whereby the curvature of the ellipsoidal ends approximates the radius of said end bridges,

connecting links for interconnecting said working links to form a chain mesh having a predetermined design,

said connecting links being defined as circular rings closed by welding, and that said connecting rings have a cross-sectional area which is smaller than the area of said apertures, whereby said circular rings are loosely received in adjacent apertures of adjacent working links for interconnecting said working links to form a predetermined mesh design,

said connecting links being disposed substantially parallel to the tire and normal to the longitudinal plane of said working links,

readily detachable terminal links for interconnecting the ends of said chain mesh along a line transversely to the direction of travel to define an annular net,

said terminal link functioning as a working link in the assembled position of said chain,

each of said terminal links comprising a substantially rectangular body similar to outline to said working link,

said terminal link having a longitudinally extending aperture communicating with a transversely extending slot formed in one longitudinal surface of said terminal link,

each of said terminal links being formed with opposed working surfaces along the longitudinal edges thereof,

the thickness of said terminal links progressively increasing from a horizontal center line outwardly toward the respective working surfaces of the terminal links,

a fastener having opposed end portions adapted to extend through said terminal link aperture for closing said slot to secure the connecting links in the assembled position of said chain,

said terminal link having a recess formed in the opposed side surfaces thereof for accommodating the end portions of said fastener,

and said terminal link having its end portions generally ellipsoidal in shape.

3,892,269

PNEUMATIC TIRE

Leslie Vernon Powell, Lichfield, and Reginald Harold Edwards, Coldfield, both of England, assignors to Dunlop Holdings Limited, England

Continuation of Ser. No. 150,561, June 7, 1971, abandoned. This application July 13, 1973, Ser. No. 378,825

Claims priority, application United Kingdom, June 20, 1970, 30030/70

Int. Cl. B60c *9/02, 17/00*

U.S. Cl. 152—330 **7 Claims**

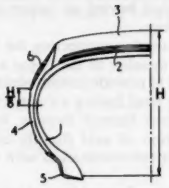
1. A pneumatic tire and wheel assembly capable of being run in a deflated condition having a single inflation chamber comprising:

a. a wheel having a wheel rim with a pair of annular flanges;

b. a pneumatic tire comprising sidewall portions and a tread portion whose width is greater than the width of the wheel rim measured between the flanges;

c. means to prevent the tire from becoming dislodged from the wheel when running deflated;

d. a lubricant which, when the assembly is used with the tire in a deflated condition, will facilitate relative movement of contacting interior surfaces of the tire; and



e. means to facilitate folding between said sidewall portions and tread portion, said means comprising an annular layer of soft rubber having a thickness of at least 1 mm extending over a major proportion of the outer region of each of the sidewall portions, said soft rubber having a hardness of 45 B.S.I. or softer, the outer region of each sidewall being free of discontinuities of thickness which lead to concentration of stresses during severe flexing.

3,892,270

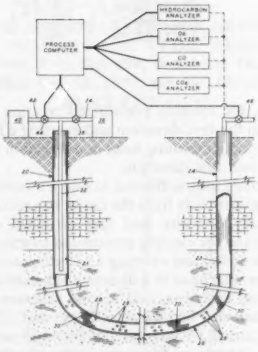
PRODUCTION OF HYDROCARBONS FROM UNDERGROUND FORMATIONS

Robert H. Lindquist, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed June 6, 1974, Ser. No. 476,836

Int. Cl.[2] E21B *43/24*

U.S. Cl. 166—251 **8 Claims**



1. A method for converting petroleum within an underground formation into combustible product gas and bringing the so-formed product gas to the Earth's surface for subsequent distribution comprising connecting at least one input well with at least one producing well by a lateral connecting hole which at least in part penetrates an underground formation containing petroleum; packing said connecting hole with a permeable material so that said connecting hole has a permeability in excess of the permeability of said underground formation; injecting oxidizing gas and steam down said input well into said lateral connecting hole to react with petroleum in said formation by partial oxidation and by thermal cracking to form a product gas containing sufficient fractions of at least one of the components carbon monoxide, hydrogen and methane to be combustible, producing said product gas from said formation through said producing well; analyzing said product gas for values of C_1 and C_2 hydrocarbons, carbon monoxide and carbon dioxide; and controlling the reactions within said connecting hole based on said values to optimize the Btu value of said product gas.

3,892,271

MOULD FOR MAKING AN ARTICLE WITH A BRANCH PIPE BY THE ELECTROSLAG REMELTING PROCESS

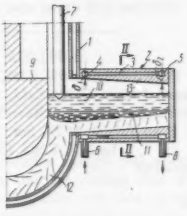
Boris Izrailevich Medovar, Bulvar Lesi Ukrainki, 2, kv. 8; Ilya Iosifovich Kumysh, Vozdukhoflotsky prospekt, 42, kv. 51; Georgy Alexandrovich Boiko, ulitsa Vladimiro Lybedskaya, 16, kv. 106, all of Kiev; Volf Iudovich Rabinovich, ulitsa Gagarina 74, kv. 27, Chekhov Moskovskoi oblasti; Alexandr Ivanovich Sapozhnikov, ulitsa Mosfilmovskaya 17/25, kv. 63, Moscow; Georgy Sergeevich Marinsky, ulitsa Tatarskaya, 1, kv. 9, Kiev, and Jury Nikolaevich Kriger, ulitsa Oktyabrskaya, 38, kv. 59, Chekhov Moskovskoi oblasti, all of U.S.S.R.

Filed Mar. 6, 1973, Ser. No. 338,570

Claims priority, application U.S.S.R., Mar. 7, 1972, 1754963

Int. Cl. B22d *27/02*

U.S. Cl. 164—252 **3 Claims**



1. A mould to be used in an electroslag remelting process for making an article with a branch pipe, which comprises in combination: a first part having walls to form a body of the article; a second part having walls to form the branch pipe of the article and having a portion thereof disposed adjacent to said first part forming the body of the article; passages for a cooling agent being disposed in said walls of said first and second parts forming the body and branch pipe of the article; a first pipe connection to supply the cooling agent into said passages disposed in said walls of said second part forming the branch pipe of the article, the pipe connection being disposed within an area adjacent to said first part forming the body of the article in a zone wherein a consumable electrode is located; and a second pipe connection to withdraw the cooling agent from said passages disposed in said walls of said second part forming the branch pipe said second pipe connection being further disposed at the remote end thereof.

3,892,272

APPARATUS FOR THE REMOVAL OF NON-METALLIC IMPURITIES FROM MOLTEN METAL

Walter C. Troy, Evanston, Ill.; James J. Novak, Miami, Fla.; Richard C. Costello, West Chicago, and Raymond J. Dearth, Roselle, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

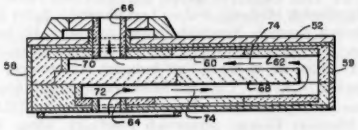
Filed Mar. 14, 1969, Ser. No. 807,192

Int. Cl. B22d *17/06*

U.S. Cl. 164—306 **2 Claims**

1. In a bottom pressure casting arrangement including means for forcing molten metal vertically upward from a ladle through a pouring tube and into the casting cavity of a mold by the application of super atmospheric pressure to said metal, apparatus for removal of non-metallic impurities from said molten metal comprising a body disposed between said pour-

ing tube and said mold, said body composed of a refractory material that is isomorphic with at least a portion of said impurities, a passage through said body, an outlet from said passage in communication with said casting cavity, an inlet into said passage communicating with said pouring tube, said passage being substantially horizontal and constructed to divert metal flow there through away from vertical flow to allow relatively light impurities in said molten metal to rise



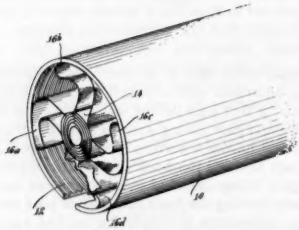
therein and adhere to said body, and a substantially horizontal weir in said body dividing said passage into an upper passage and a lower passage, said inlet communicating with said lower passage proximate one end thereof, said outlet communicating with said upper passage proximate the same end thereof as said inlet, and said weir being spaced from said body at the other end of said upper and lower passages to provide a vertical passage between said upper and said lower passages.

3,892,273

HEAT PIPE LOBAR WICKING ARRANGEMENT

Burke Edward Nelson, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed July 9, 1973, Ser. No. 377,728
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **5 Claims**



1. A heat pipe comprising: a thermally conductive tube having circumferential grooves in its inner surface; a liquid contained within said tube; a primary wick extending substantially axially through said tube to transport said liquid therealong; and a secondary wick comprising a screen formed into radial lobes deformed between said primary wick and said inner surface, said lobes contacting said inner surface at circumferentially spaced, discrete regions thereof to transport said liquid between said primary wick and said inner surface.

3,892,274

RETRIEVABLE SELF-DECENTRALIZED HYDRA-JET TOOL

Floyd E. Dill, Midland, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed May 22, 1974, Ser. No. 472,238
Int. Cl. E21b *37/00*
U.S. Cl. 166—222 **10 Claims**

1. A retrievable self-decentralized hydra-jet tool for seating in a seating nipple within and proximate to the lower end of a tubing string in a well bore for use with a source of pressurized treating fluid communicating with the tubing string for jet treating the well bore, comprising:

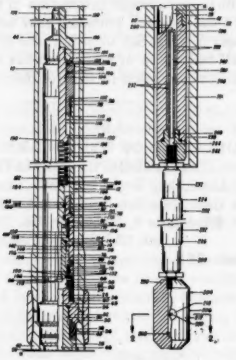
a. a tubular member, having an upper end portion and a lower end portion and slidably receivable within the tubing string, said tubular member having annular shoulder means formed on the outer periphery thereof for engaging the seating nipple to limit downward movement thereof within the tubing string;

b. a flexible conduit having an upper end portion and a lower end portion;

c. connecting means for connecting the lower end portion of said tubular member to the upper end portion of said flexible conduit to provide communication therebetween;

d. a jet treating head having a cavity formed therein and connecting means formed thereon for connecting the lower end portion of said flexible conduit to said jet treating head in communication with the cavity formed therein;

e. first nozzle means, formed in said jet treating head and extending outwardly from the cavity therein in a first



direction, for ejecting pressurized treating fluid therethrough in the first direction and exerting a first reaction force on said jet treating head in a direction substantially opposite said first direction;

f. second nozzle means, formed in said jet treating head and extending outwardly from the cavity in a second direction substantially opposite said first direction of said first nozzle means, for ejecting pressurized treating head in the second direction and exerting a second reaction force on said jet treating head in a direction substantially opposite said second direction, said second reaction force being greater than said first reaction force; and

g. means, carried by said tubular member and extending upwardly therefrom, for engaging an external retrieving device, for unseating said tubular member from the seating nipple in response to operation of said retrieving device and for retrieving said tool from the tubing string in response to further operation of said retrieving device.

3,892,275

SELF-THINNING AND NEUTRALIZING THICKENED AQUEOUS LIQUID

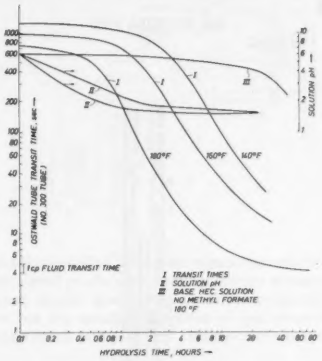
James H. Lybarger, Metairie, La., and Ronald F. Scheuerman, Bellaire, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 24, 1974, Ser. No. 436,290
Int. Cl.[2] E21B *43/04, 43/27*
U.S. Cl. 166—250 **5 Claims**

1. A well treating process which comprises:
determining the approximate time and temperature to which a fluid will be subjected when the fluid has a se-

lected viscosity and is pumped at a selected rate to a zone to be treated within the well;

compounding an aqueous liquid that contains (a) enough dissolved acid-reactive cellulosic water thickener to provide the selected viscosity, (b) an amount and composition of substantially homogeneously distributed acidifying material sufficient to cause a decrease in the solution



viscosity at a selected time after the solution reaches said zone when pumped at said rate; and (c) an amount of substantially homogeneously distributed relatively slowly reactive pH-increasing material sufficient to raise the pH of the solution to a selected substantially neutral value within a selected additional time; and

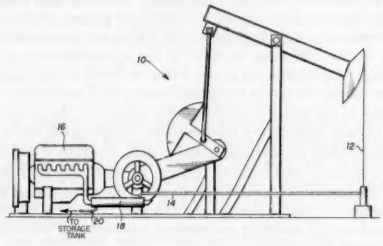
pumping the compounded aqueous liquid into the well at a rate substantially equalling the selected rate.

3,892,276

METHOD AND APPARATUS FOR HEATING OIL PUMPED FROM AN OIL WELL

Arthur B. Wells, P. O. Box 489, Jacksboro, Tex. 76056

Filed Nov. 29, 1973, Ser. No. 420,213
Int. Cl. E21b *43/00*
U.S. Cl. 166—267 **7 Claims**



1. A method of breaking down water-paraffin emulsion in oil comprising:

moving oil from a well with a motor which emits heated exhaust gases;

passing the exhaust gases from the motor through a plurality of confined paths in a heat exchanger;

passing all of the oil pumped from the well around said confined paths in said heat exchanger in order to heat the oil to an extent that the water-paraffin emulsion is broken.

2. An apparatus for breaking down the water-paraffin emulsion in oil as the oil is removed from an oil well comprising:

an oil well pump motor which emits heated exhaust gases as said motor pumps the oil from the well;

a shell having an inlet for receiving all of the oil pumped from the well and an outlet for discharging the oil;

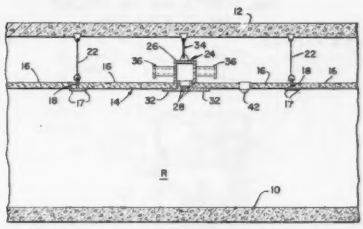
at least one tube member disposed within said shell with both ends of said tube protruding through said shell and with the first end of said tube being adapted to receive the exhaust gases from the motor whereby all of the oil pumped from the well is heated by the exhaust gases to an extent that the water-paraffin emulsion is broken.

3,892,277

FIRE PROTECTION SYSTEM

Jeremiah M. Curran, 2021 Gorman St., Philadelphia, Pa. 19116

Continuation-in-part of Ser. No. 358,890, May 10, 1973, abandoned. This application July 3, 1974, Ser. No. 485,681
Int. Cl. B05b *15/06*; **A62c** *35/00*, *37/06*
U.S. Cl. 169—16 **17 Claims**



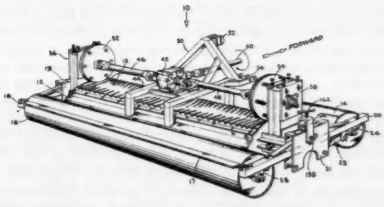
1. An integral fire protection system and ceiling structure comprising a plurality of discrete ceiling tiles, a supporting grid for supporting the ceiling tiles, a hollow, elongate conduit incorporated into said supporting grid for carrying extinguishant under pressure, a source of extinguishant under pressure, valve means for maintaining the conduit empty of extinguishant when the system is in an inactive state, detector means for detecting a fire, said valve means being responsive to the detecting means for causing the valve means to supply extinguishant to the conduit upon the detection of a fire by said detecting means, and the conduit including means for spraying extinguishant outwardly of the conduit.

3,892,278

ROTARY TILLER-MULCHER

Alexander Smith, and Burton D. Baggs, Jr., both of Sanford, Fla., assignors to Smitty's Incorporated, Sanford, Fla.

Filed Dec. 27, 1972, Ser. No. 319,039
Int. Cl. A01b *33/00*
U.S. Cl. 172—70 **20 Claims**



1. In a tiller having a bladed rotor driven in the opposite rotative direction to that of supporting wheels, the improvement comprising said bladed rotor having at least one helical row of radially-disposed blades, each of a majority of said blades having a pair of essentially radially disposed working faces thereon, the working faces of each pair residing in differ-

ent planes, and together forming a vertex, each pair of working faces being disposed at essentially equal angles to a plane passing through the vertex orthogonal to the axis of said bladed rotor, said bladed rotor being disposed in a fixed cooperative cover embracing approximately the upper half of the sweep of said bladed rotor, said cover having a gap therein disposed essentially parallel to and spaced above the axial center of said bladed rotor, and a plurality of essentially parallel lengths of chain attached to said cover so as to span the gap, the motion of said chains, taking place during the operation of said tiller, preventing the buildup of earth on the underside of said cover.

3,892,279

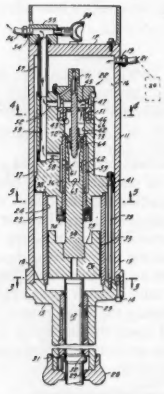
RECIPROCATING HYDRAULIC HAMMER

Lester A. Amtsberg, Utica, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.

Division of Ser. No. 165,539, July 23, 1971. This application Dec. 6, 1973, Ser. No. 422,259

Int. Cl. B25d 9/04

U.S. Cl. 173—13 **13 Claims**



1. In a reciprocating hydraulic hammer including a housing to which a fronthead is attached adapted to receive a slidable work steel, and including a piston hammer reciprocable in the housing to pound the work steel, an outer jacket within which the housing has a fixed position defines a reservoir in surrounding relation to the housing, an inlet to the reservoir adapted for connection to a pressure oil supply system for filling and maintaining the reservoir constantly pressurized with oil, the piston hammer having a driving end, a first chamber in the housing about the driving end of the piston hammer, valve means in the housing having response to a return stroke of the piston hammer to communicate the reservoir with the chamber, a pressure oil discharge line in the housing adapted for connection with an external sump of the supply system, the valve means having response to movement of the piston hammer on a work stroke to communicate the chamber with the discharge line and to block communication of the chamber with the reservoir, a slidable return plunger constantly subject to pressure of oil in the reservoir so as to constantly abut a bottom face of the piston hammer, the piston hammer having a lower section defining a hammer member providing said bottom face, the housing having a lower section defining an air chamber in which the hammer member reciprocates, and the return plunger having response to pressure of oil in the reservoir following blocking of communication of the said first chamber with the reservoir to move the piston hammer on a return stroke.

3,892,280

PORTABLE PNEUMATIC IMPACT TOOL

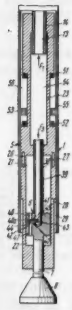
Nikolai Alexandrovich Klushin, ulitsa Narodnaya, 1, kv. 23; Petr Avramovich Maslakov, ulitsa Voskhod, 7, kv. 42, and Vladimir Petrovich Kotov, 9 Trikotazhny pereulok, 27, all of Novosibirsk, U.S.S.R.

Filed May 2, 1974, Ser. No. 466,511

Claims priority, application U.S.S.R., Oct. 30, 1973, 1963901

Int. Cl. B25d 9/00

U.S. Cl. 173—162 **8 Claims**



1. A portable pneumatic impact tool comprising: a casing; a housing in said casing axially movable relative thereto and having a space in constant communication with a compressed air source; a main piston mounted in said casing and received in the space of said housing for axial movement together with said casing relative to said housing, the compressed air pressure in the space of said housing resulting in the development of a force applied to said casing so as to urge it away from said housing; a hammer piston mounted for axial movement in said housing for imparting useful blows; said housing and said hammer piston defining working chambers which are alternately communicated with a compressed air source and atmosphere; means for alternately feeding compressed air into said working chambers for thereby imparting reciprocations to said housing and said hammer piston, whereby said hammer piston imparts useful blows; an additional piston; drive means for imparting reciprocations to said additional piston substantially in the antiphase relation to the reciprocations of said housing; said additional piston being received in the space of said housing during the reciprocations so that variations in the volume of the space of said housing caused by the reciprocation of said housing are substantially compensated for by the reciprocations of said additional piston, whereby the volume of the space of said housing remains substantially unchanged, and hence the pressure fluctuations of the compressed air in the space of said housing are reduced, whereby the force applied to said casing is maintained constant and vibration of said casing is lowered.

3,892,281

TEMPERATURE MEASURING SYSTEM HAVING SENSOR TIME CONSTANT COMPENSATION

Neil L. Brown, Sippiwissett, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 31, 1974, Ser. No. 494,000

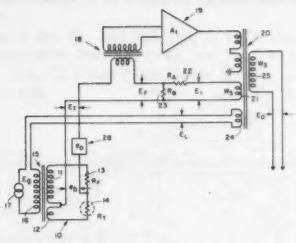
Int. Cl. G01k 7/16

U.S. Cl. 73—362 AR **9 Claims**

1. A method for improving the response of a platinum resistance temperature sensor which is being employed to produce a signal indicative of the temperature of a medium, comprising the steps of

measuring the temperature of the medium with a thermistor which also produces a signal indicative of the temperature of the medium;

modifying the amplitude of the signal produced by said thermistor so as to have it correspond to the response of a simple high-pass RC filter to a DC step input signal; and



adding the modified amplitude signal from the thermistor to the signal produced by said platinum resistance temperature sensor thereby to obtain a composite signal which has the speed of response of said thermistor and the stability of said platinum resistance temperature sensor.

3,892,282

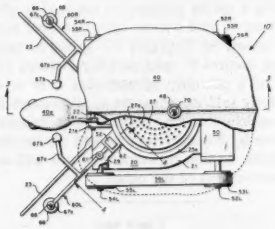
RANDOM MOTION SUCTION CLEANER

Stanley S. Wulc, Rydal, Pa., assignor to Total Enterprises, Inc., Hatboro, Pa.

Division of Ser. No. 28,453, April 14, 1970, Pat. No. 3,676,774. This application July 18, 1972, Ser. No. 272,846

Int. Cl. B62d *11/04*

U.S. Cl. 180—6.5 **4 Claims**



1. A random motion vehicle having a forward end and normally adapted to move in a straight line with said forward end leading across a horizontal surface, to sense an obstacle, to turn away from said obstacle, and to continue to move in a changed direction with said forward end leading, said vehicle comprising,

a base, said base supporting the following means,

only a left side forward end obstacle contact sensing means and a right side forward end obstacle contact sensing means,

a left side independent drive means and a right side independent means, each said drive means including at least one motor and at least one wheel, each said wheel being rotatable only in a plane parallel to the direction of motion of said vehicle and driving a horizontal surface-contacting traction belt,

a logic and control means operatively connected to said drive means and said sensing means to turn said vehicle to change said direction of motion, by sensing an obstacle contact sensing signal from one of said sensing means causing said logic and control means to initiate a programmed cycle of instruction signals to said drive means, said cycle being; left and right drive means pause, left and right drive means reverse; left and right drive means pause; one of said drive means drive reverse and the other of said drive means drive forward, left and right drive means pause; left and right drive means resume normal forward drive.

3,892,283

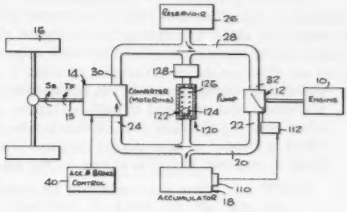
HYDRAULIC DRIVE

John W. Johnson, Manhattan Beach, Calif., assignor to Advanced Power Systems, Los Angeles, Calif.

Filed Feb. 19, 1974, Ser. No. 443,220

Int. Cl. B60k *17/10*

U.S. Cl. 180—66 R **6 Claims**



1. In a vehicle which includes an output shaft coupled to at least one wheel for propelling the vehicle, and a brake pedal means which is operated when it is desired to slow the vehicle, the improvement comprising:

an engine;

a hydraulic pump coupled to the engine to be driven by it;

a hydraulic converter coupled to the output shaft, said converter having first and second ports;

an accumulator for storing and releasing hydraulic fluid under pressure, said accumulator coupled to the outlet of said pump and the first port of said converter;

a hydraulic fluid reservoir coupled to the inlet of said pump and the second port of said converter;

said hydraulic converter including means operable as a motor to drive the output shaft in a forward direction in response to the passage of hydraulic fluid from the first to the second port thereof, said means of said converter also being operable as a braking pump to pump fluid from the second to the first port thereof in response to torque from said output shaft as said output shaft turns in a forward direction; and

operating means coupled to said brake pedal means for operating said means of said hydraulic converter as a braking pump, whereby to use braking energy from the output shaft to pump hydraulic fluid into the accumulator for future use without requiring an additional pump or complicated valve system.

3,892,284

WHEEL SUSPENSION FOR MOTOR VEHICLES

Hans-Hermann Braess, Stuttgart-Stammheim, and Rudolf Kronewitter, Boblingen, both of Germany, assignors to Dr. Ing. h.c.F. Porsche, AG, Germany

Filed Jan. 4, 1973, Ser. No. 320,907

Claims priority, application Germany, Jan. 5, 1972, 2200351

Int. Cl. B60k *17/32*

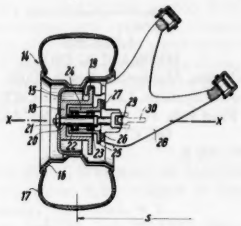
U.S. Cl. 180—73 D **25 Claims**

1. A wheel suspension for a vehicle comprising:

wheel guide means retained at a relatively fixed one of a vehicle body having a longitudinal direction and a vehicle frame,

wheel carrier means for rotatably supporting a vehicle wheel in use,

plural elastic support means interconnecting said wheel carrier means and said wheel guide means, at least two of



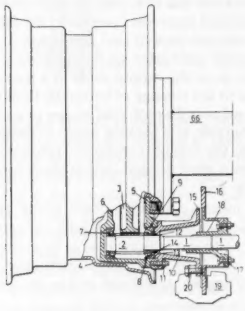
said elastic support means being, respectively, of different elasticities and arranged in such a manner as to yield a wheel steering moment pole of elastic wheel movement which is located so as to permit only toe-in wheel adjustment in response to forces acting on the wheel in use.

3,892,285

DUST PROTECTION DEVICE FOR REDUCTION UNITS AT THE DRIVE WHEELS OF LARGE AGRICULTURAL MACHINES

Mario Bruni, Sesto S. Giovanni, Milano, Italy, assignor to White Farm Equipment Company, Wilmington, Del.

Filed May 7, 1974, Ser. No. 467,826
Claims priority, application Italy, May 18, 1973, 46850/73
Int. Cl. B60t *17/00*
U.S. Cl. 180—75 **1 Claim**



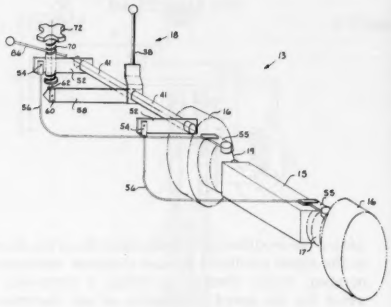
1. Dust protection device for reduction units at the drive wheels of large agricultural machines, substantially of the type in which the wheel rim rotates idly on a stub axle rigid with the machine chassis and is rigid with a gear wheel of large diameter which engages with a small pinion gear present at the end of the drive shaft for said wheel, the reduction unit being contained in an oil tight housing having an inlet opening for the drive shaft, said device comprising in combination with the friction disc of a braking device which rotates rigidly with the drive shaft, a fixed hollow bell shaped body extending from said inlet opening and terminating in a flat circular rim parallel and very close to said friction disc, so that said disc, on rotating, induces a centrifugal vortex of air inside said bell.

3,892,286

FINE SPEED CONTROL FOR A VEHICLE

James T. Clevenger, Jr., Lancaster, and Gary C. Snyder, New Holland, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed June 26, 1973, Ser. No. 373,831
Int. Cl.[2] B60K *41/00*; **G05G** *11/00*
U.S. Cl. 180—77 R **10 Claims**



1. Improved vehicular control apparatus comprising, in combination,

A. a frame,

B. ground engaging means mounted on the frame,

C. drive means operably connected to the ground engaging means,

D. control means mounted on said frame and associated with said drive means, said control means comprising

1. a coarse speed control having means to vary over a full range of positions the power to said drive means for controlling speed of the vehicle,

2. a fine speed control having a main body portion comprising a spring adapted to respond to changes in the position of said coarse speed control varying means, and means for engaging the spring to permit said fine speed control to set said coarse speed control at any one of a plurality of positions over said full range, whereby said drive means is allowed to automatically respond to changing power requirements; and

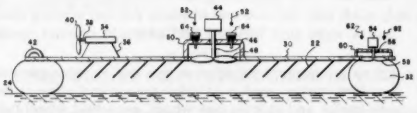
3. means for interconnecting said coarse and fine speed controls, so that movement of one will directly effect the movement of the other.

3,892,287

VACUUM ICE ANCHOR

John Bennett, Denton, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed Sept. 20, 1973, Ser. No. 399,239
Int. Cl. B60b *39/00*
U.S. Cl. 180—115 **8 Claims**



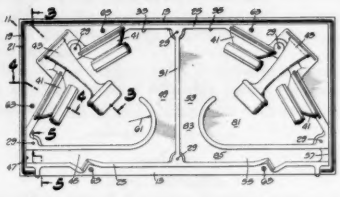
1. Ice anchor for providing horizontal restraint, comprising a planar member having a large surface area; means extending downwardly from the periphery of the planar member for sealing said periphery to the ice and for providing an enclosed area under the planar member; means for evacuating air from the enclosed area to hold said anchor against the ice; and a multiplicity of downwardly-directed, rigid elongated spikes attached to the underside of the planar member and slanted

at an angle thereto, said spikes being uniformly spaced across said planar member and of such length as to penetrate the ice.

3,892,288
SPEAKER ENCLOSURE

Arnold I. Klayman, and Leonard J. Genest, both of Huntington Beach, Calif., assignors to Monitron Industries, Inc., Santa Ana, Calif.

Continuation of Ser. No. 167,903, Oct. 2, 1971, abandoned. This application June 18, 1973, Ser. No. 370,717
Int. Cl. G10k *13/00*; **H04r** *1/28*
U.S. Cl. 181—156 **10 Claims**

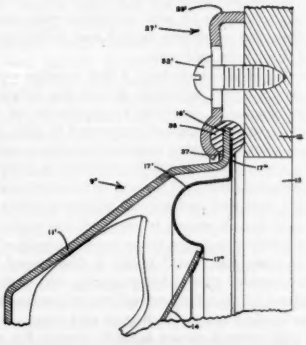


1. Speaker apparatus comprising:
a. an enclosure adapted to have at least one speaker mounted on a surface thereof; and
b. duct means having a first terminus which is open and a second terminus having a smoothly flared opening into said enclosure, said first terminus being spaced and directed away from the front of the speaker to be mounted on said surface so as to prevent sound from said speaker from being propagated through said first terminus into said duct means, and the boundary of said flared opening having a non-linear curvature which produces a Venturi effect between the volume of air in said enclosure and the volume of air in said duct means.

3,892,289
LOUDSPEAKER

William L. Rollins, Monroe, Wis. 53566

Filed July 2, 1973, Ser. No. 375,729
Int. Cl. G10k *13/00*; **H04r** *7/00*
U.S. Cl. 181—171 **3 Claims**

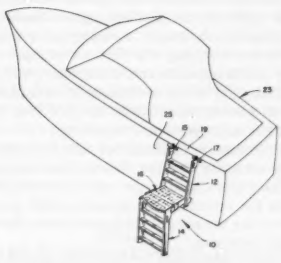


1. In a loudspeaker embodying means reciprocally driven responsively to signal current biasing, an improvement for rendering more nearly constant the ratio of acoustic output to input power throughout the range of acoustic response, comprising in combination,
a. a structural basket,
b. a voice coil disposed for axial movement within a force field responsively to biasing force created by a signal current in said voice coil,
c. a diaphragm aligned and connected integrally to said voice coil, said diaphragm being recessed rearwardly from the forward extremity of said basket to be drivable not substantially forward thereof,
d. an annular suspension collar fixed at its inner peripheral extremity to the circumferential extremity of said diaphragm and at its outer peripheral extremity to the forward extremity of said basket and configured with an annular corrugation having a minimum depth in the direction of drive of said diaphragm at least substantially as great as the amplitude of such drive from rest,
e. a moisture non-absorbent gasket disposed for seating the forward extremity of said basket upon a baffle to provide a vapor proof, distortion free mounting therefor,
f. fastening means anchorable to a baffle and configured to forcibly compress said gasket and retain said basket immobile upon such baffle wherein contact of said fastening means is made in substantial incidence with the projection of said gasket normal to the plane of such baffle.

3,892,290
BOAT LADDER

Irving M. Lang, 61 Franklin St., Tenafly, N.J. 07670

Filed Sept. 16, 1974, Ser. No. 506,254
Int. Cl.² **E06C** *1/36, 1/383*
U.S. Cl. 182—22 **10 Claims**

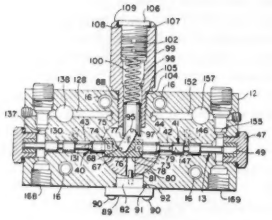


1. A portable marine ladder securable to a boat deck or hulland extendible along the side of the hull for boarding or disembarking, said ladder comprising an upper ladder section having plural spaced foot rungs extending between two parallel stiles, attachment means on the upper ladder section for suspending the ladder downwardly toward the water surface, a lower ladder section having plural spaced foot rungs extending between two stiles, platform means connected to said upper and lower ladder sections for providing a substantially horizontal support surface between the upper and lower ladder sections, said platform having a transverse width greater than the width of the ladder rungs wherein the platform defines a bottom rung of the upper ladder section and a coincident top rung of the lower ladder section, said platform further being positionable into a substantially horizontal orientation projecting outwardly away from the hull and having an open space thereabove and adjacent the upper ladder section with the upper ladder section and the lower ladder section each being in distinct substantially vertical planes horizontally spaced a distance approximating the transverse width of the platform when the ladder is extended to provide a landing for standing or resting during ascent or descent from the boat.

3,892,291
REVERSING VALVE

Peter H. Acker, Chesterland, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed May 3, 1974, Ser. No. 466,561
Int. Cl. F16r 7/14; F01m 1/00
U.S. Cl. 184—7 E 9 Claims



6. In a pressurized lubrication system including a source of pressurized lubricant, at least one pair of conduits leading to lubricant distributors, and a reversing valve including a primary valve for directing the flow of pressurized lubricant alternately to the conduits and a secondary valve for activating the primary valve, the secondary valve including a pair of spaced apart pistons reciprocally movable in unison along the same axis, the improvement comprising:

a toggle mechanism disposed between the pistons and operatively attached thereto for axial movement in unison with the pistons, said toggle mechanism coacting with the pistons for retarding the pistons initial movements and accelerating the pistons final movement, the toggle mechanism comprising:

a slider block interposed between the pistons and attached for axial movement in unison with the pistons, said slider block having a first generally V shaped groove running transverse the axis of the pistons and a generally smooth first surface radially opposite the first groove, said first surface extending in a direction parallel to the axis of the pistons;

a fixed slipper plate mounted to said reversing valve, said slipper plate having an axially extending groove for receiving said slider block, the bottom surface of said axially extending groove being generally smooth and corresponding in shape to said first smooth surface for sliding receipt of same and the side walls of said axially extending groove coacting with the slider block to prevent rotational movement of said slider block;

a guide block having a second generally V shaped groove therein, said second V shaped groove being in spaced apart concave opening relation with said first U shaped groove;

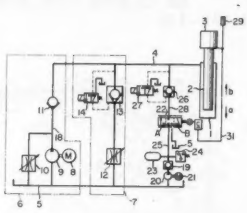
a throw link interposed said guide block and said slider block, said throw link having one end pivotally mounted in said first V shaped groove and the opposite end pivotally mounted in said second V shaped groove; and

biasing means for biasing said guide block towards said slipper plate to apply a compressive force on the opposite ends of said throw link.

3,892,292
HYDRAULIC ELEVATORS

Mitsuaki Takenoshita, Katsuta; Fumio Fujisawa, Mito, and Ichiro Nakamura, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sept. 12, 1972, Ser. No. 288,305
Claims priority, application Japan, Sept. 17, 1971, 46-71801
Int. Cl. B66b 11/04
U.S. Cl. 187—17 36 Claims



1. A fluid operated elevator comprising:

a load accommodating cage,

a plunger and a cylinder which are movable with respect to one another in response to supply of pressurized fluid therebetween, said cage being connected to one of said plunger and cylinder for movement therewith,

pressurized fluid conduit means communicating with a space between said cylinder and plunger for supplying said pressurized fluid to said space with a consequent movement of said cage in a first direction and for discharging said pressurized fluid from said space with a consequent movement of said cage in a second direction opposite said first direction,

main fluid control means for controlling the supply and discharge of said pressurized fluid to said space such that said cage is moved between a plurality of predetermined stop positions at respective spaced loading and unloading stations,

detecting means for detecting displacement of said cage in said first and second directions from respective stop positions of said cage,

cage position adjusting means responsive to signals from said detecting means which indicate displacement of said cage from the respective stop position for automatically returning said cage to said respective stop position by controlling the respective supply and discharge of pressurized fluid from said space,

said detecting means including: a first member operatively connected to said adjusting means for actuating said adjusting means in response to movement of said first member, a second member connected to said cage such that said second member is moved whenever said cage is moved, and clutch means for selectively coupling and uncoupling said first and second members to one another such that said first and second members move together when said clutch means is engaged and such that said second member and cage move independently of said first member when said clutch means is disengaged,

and clutch control means for engaging said clutch means only after said cage has arrived at a respective stop position for loading and unloading of said cage,

wherein said control means includes means for automatically engaging said clutch means after said cage has arrived at a respective stop position and before initiation of any loading or unloading of said cage and for automatically disengaging said clutch means after completion of any loading or unloading of said cage and before movement of said cage to another stop position, whereby said

clutch is engaged only when said cage is in a condition for accommodating loading and unloading thereof such that said adjusting means is operative for accommodating changing loads on said cage,

wherein said adjusting means includes an auxiliary fluid circuit for supplying pressurized fluid into said space independently of the operation of the main fluid control means, said auxiliary fluid circuit including:

an auxiliary conduit communicating with said space,

an auxiliary pump for supplying pressurized fluid to said auxiliary conduit,

a check valve in said auxiliary conduit for preventing backflow of fluid to said auxiliary pump,

a direction control valve for controlling the flow of pressurized fluid through said auxiliary conduit,

and an accumulator interposed between said auxiliary pump and said control valve for accumulating a supply of pressurized fluid,

and wherein said control valve is movable in response to said signals from said detecting means for controlling communication of said accumulator with said space.

3,892,293

DISC BRAKES

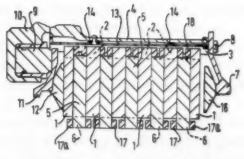
Frederick Sidney Dowell, Coventry, England, assignor to Dunlop Limited, England

Filed Dec. 18, 1973, Ser. No. 425,854

Claims priority, application United Kingdom, Dec. 21, 1972, 59246/72

Int. Cl. F16d *55/36*

U.S. Cl. 188—71.5 **8 Claims**



1. A multi-plate wheel disc brake comprising a disc pack comprising a plurality of interleaved annular rotor and stator discs each of substantially constant thickness throughout its radial cross section and each of a highly oxidizable, heat absorptive carbon material, the rotor discs having annular peripheral torque-taking portions which are keyed to key means rotatable with the wheel for rotation therewith and which extend radially beyond the stator discs so that free spaces exist between the torque-taking portions of each adjacent pair of rotor discs, the stator disc therebetween and the key means, the stator discs having inner peripheral torque-taking portions which are keyed to a non-rotatable torque tube which extends radially inwardly of the rotor discs so that free spaces exist between said torque-taking portions of each adjacent pair of stator discs, the rotor discs therebetween and the torque tube, said stator and rotor discs being axially slidable but non-rotatable relative to the torque tube and wheel, respectively, thrust applying means arranged at one end of the disc pack and reaction means at the other end of the disc pack, said thrust applying means being actuable to displace the stator and rotor discs into frictional engagement to engage the brake, wherein oxidation retarding carbon filler pieces formed separately from the brake discs are located in circumferentially spaced relation between circumferentially adjacent pairs of torque tube keys in the free spaces between the torque-taking portions of adjacent pairs of stator discs, said filler pieces being shaped and arranged to lie between the torque tube keys and occupy at least the greater part of said free spaces between the rotor discs and the torque-tube.

3,892,294

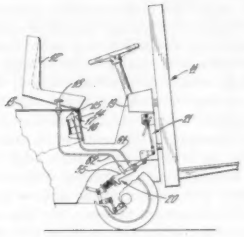
DEAD-MAN PARKING BRAKE

Robert A. Nieminski, Philadelphia, Pa., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 28, 1974, Ser. No. 446,999

Int. Cl. F16d *65/30*

U.S. Cl. 188—109 **9 Claims**



1. In a vehicle including a braking mechanism associated with one or more wheels of said vehicle an operator's station on said vehicle movable between an occupied position and an unoccupied position, brake linkage means movable between a brake applied position and a brake released position for controlling actuation of said braking mechanism, biasing means operatively connected to said brake linkage means and applying a force tending to move said linkage means to its brake applied position to actuate said braking mechanism to prevent movement of said vehicle, latch means engageable with said brake linkage means to hold said linkage in its brake released position, means operatively connected to said operator's station for releasing said latch means when said operator's station moves toward its unoccupied position permitting said brake linkage means to move toward its brake applied position, and means independent of said operator's station for returning said brake linkage means to its brake released position to release said braking mechanism and for returning said linkage means into position for re-engagement by said latch means, said latch means being effective to re-engage said brake linkage means only when said operator's station is in its occupied position.

3,892,295

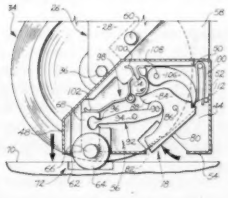
BOUNDARY-RESPONSIVE WHEEL LOCK FOR A WHEELED VEHICLE

Charles Hahto, 1755 N. Berendo St., Los Angeles, Calif. 90027

Filed Apr. 24, 1974, Ser. No. 463,572

Int. Cl. B60t *7/18*

U.S. Cl. 188—111 **8 Claims**



1. Boundary-responsive wheel lock for a wheeled vehicle provided with and rollably supported by multiple wheels, at least one of which is provided with said boundary-responsive wheel lock, comprising: wheel-lock housing means defining a hollow interior wheel-lock mounting chamber therein and provided with a rigidly connected attachment member and fastener means cooperable for rigidly fastening said attach-

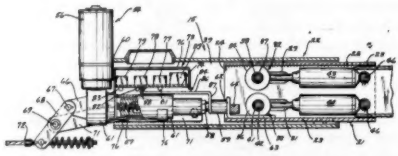
ment member to a main wheel mounting bracket carried by a leg of said wheeled vehicle, said housing means being provided with a vertically slidably mounted, small actuating wheel connected to an actuating arm which is vertically slidably carried by and positioned within the hollow interior wheel-lock-mounting chamber within said housing means, with said actuating wheel being positioned vertically adjacent to and aligned with a bottom-positioned actuating wheel opening in said housing means for vertical movement of said small actuating wheel from a normal upper position protruding slightly downwardly through said opening for rollable contact with an underlying supporting surface during simultaneous rollable contact of main wheels of said wheeled vehicle along such a supporting surface while rolling simultaneously therewith and for downward vertical movement through said opening into a downwardly extended wheel-locking position whenever sufficient downward clearance is encountered by said small actuating wheel below the level of the bottom edge of the corresponding main wheels of such a wheeled vehicle; brake means movably mounted with respect to the hollow interior of said housing means for movement between two extreme positions, one comprising a wheel-unlocking position with respect to and spaced from the corresponding periphery of at least one of the main wheels of such a wheeled vehicle and a second extreme wheel-locking position in locking engagement with a peripheral portion of at least one main wheel of such a wheeled vehicle; and brake-operating linkage means positioned within said hollow housing means and having an input end effectively connected with respect to said actuating arm carrying said small actuating wheel and having an output end effectively connected with respect to said brake means in a manner normally moving said brake means from said wheel-unlocking position into said wheel-locking position in response to said movement of said small actuating wheel from said normal upper position into said downwardly extended wheel-locking position; latching means movably mounted within said hollow housing means and provided with effective biasing means normally biasing said latching means into latching relationship with respect to said brake means whenever said brake means is in said wheel-locking relationship; and latching means unlocking key means controllably manually engageable with respect to said latching means for forcibly disengaging same with respect to said brake means when said brake means is to be effectively released and caused to move from said wheel-locking relationship to said wheel-unlocking relationship thereof.

3,892,296

TRAILER HITCH AND BRAKE ACTUATOR ASSEMBLY

Frank A. DePuydt, and Eugene P. Conradi, both of Des Moines, Iowa, assignors to Dico Company, Inc., Des Moines, Iowa

Filed Apr. 1, 1974, Ser. No. 456,902
Int. Cl. B60t *7/20*
U.S. Cl. 188—112 **9 Claims**



1. A hitch and trailer brake actuator assembly for use between tractor and trailer vehicles comprising:

a. a pair of tubular telescoping members a first one of which is secured to the tractor vehicle and a second one of which is secured to the trailer vehicle,

b. a power actuating unit includiing an electric motor and a primary actuator member for the trailer brakes located within the rear end portion of said second telescoping member, said primary actuator member driven by said motor for extendible and retractible linear movement relative to the front end of said actuating unit,

c. a secondary actuator member for said trailer brakes movably supported on said second telescoping member at a position rearwardly of said actuating unit,

d. means operatively connecting said second actuator member with said trailer brakes,

e. means movably connecting said secondary actuator member with the rear end of said power unit,

f. an abutment member on said first telescoping member and adjacent the rear end thereof in a position for abutting engagement with said primary actuator member,

g. coacting means for limiting relative longitudinal movement between said pair of telescoping members and

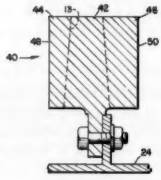
h. a control circuit for said electric motor incuding switch means for operating said motor to move said primary actuator to predetermined positions relative to said abutment member to provide for movement of said secondary actuator member to corresponding positions wherein the trailer brakes are operable in response to deacceleration of the tractor vehicle, are rendered inoperative, or are operated for parking the trailer vehicle.

3,892,297

BRAKE DISC COVERING STRUCTURE

Nelson R. Brownyer, 3731 Peabody Dr., Birmingham, Mich. 48010

Continuation of Ser. No. 320,712, Jan. 3, 1973, abandoned.
This application Feb. 12, 1974, Ser. No. 441,796
Int. Cl. F16d *65/12, 65/84*
U.S. Cl. 188—218 XL **5 Claims**

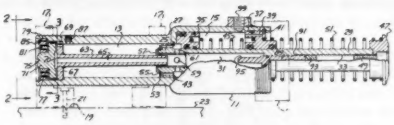


1. A disc brake assembly having a metal rotor selected from a series of metal rotors of the same construction and the same overall axial thickness, each one of said series of metal rotors having a pair of oppositely facing radial metal braking surfaces directly engageable by brake pads and separate heat sink means for absorbing and dissipating heat integral with the respective braking surfaces and backing each of said braking surfaces, said heat sink means being of different mass predetermined solely by desired heat sink characteristics for each of said heat sink means and both said heat sink means being of predetermined thickness increasing radially outwardly of the rotor center, the heat absorbing and dissipating characteristics of the two heat sink means differing to a predetermined degree and the heat absorbing and dissipating characteristics of the heat sink means of each metal rotor in said series differing from one another, whereby a metal rotor having the desired heat sink characteristics may be selected from said series and incorporated into a disc brake assembly to suit operational requirements.

3,892,298
VARIABLE ORIFICE SHOCK ABSORBER

Leland F. Blatt, 31915 Groesbeck Hwy., Grosse Pointe Shores, Mich. 48026

Filed Feb. 13, 1974, Ser. No. 441,962
Int. Cl. F16f 9/48
U.S. Cl. 188—289 8 Claims



1. A shock absorber comprising a body having a bore terminating in an enlarged counterbore, the bore completely filled with liquid, and the counterbore partially filled with liquid;

said counterbore being closed by an apertured gland vented to atmosphere;

a piston having an axial passage and adjacent one end a plurality of radial ports communicating therewith and with said counterbore, and a plurality of bleed passages interconnecting said bores;

said piston being movable within said bore and including a hollow piston rod extending through said counterbore and axially outward of said body;

an end cap on said rod adapted to be engaged by a moving mass toward the end of a longitudinal stroke;

a coiled spring, interposed between said cap and said gland, normally biasing said rod outwardly of the body;

a float valve in said bore, movable upon said piston, in registry with said passages and closing the same on retraction of said piston and opening said passages on forward return movement of said piston, permitting flow of liquid from said counterbore to said bore;

a disc-like head with axial apertures anchored in said body at one end of said bore defining at one end of the body a return chamber to receive liquid on retraction of said piston;

a metering plate sealed and rotatably adjustable in said body outwardly of said head closing the body and defining said return chamber; there being a series of radial metering passages in said metering plate having inner and outer ends and at their inner ends in communication with said return chamber and with their outer ends in variable registry with said head apertures to provide for a pre-adjusted return flow of fluid into the return chamber;

an axially apertured metering pin at one end anchored to said head and communicating with said return chamber; the other end of said pin extending into said piston; said retraction of said piston over said pin displaces liquid from said return chamber through the full length of the metering pin into said piston and piston rod and through said radial ports to said counterbore.

3,892,299
MOBILE ELECTRIFICATION CONDUCTOR SYSTEM

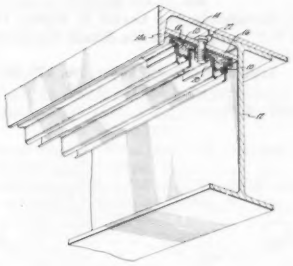
Ronald J. Kilburg, Belmont, Calif., assignor to The Rucker Company, Oakland, Calif.

Filed Apr. 19, 1974, Ser. No. 462,371
Int. Cl. B60m 1/34
U.S. Cl. 191—29 R 11 Claims

2. An electrical conductor for use in a trolley electrication system comprising:

an elongated bar having an elongated slot opening to an elongated surface of the bar, said slot being shaped to receive and retain the head of a fastener while the fastener shank extends outwardly through the slot for connection to a splice element, said bar being formed of a good electrically conductive material such as aluminum;

a cap made of a more wear resistant conductive material such as stainless steel positioned over a portion of said bar to form a contact surface for the bar adapted to engage a sliding conductor on an electrical collector, said slot opening to the surface of the bar opposite from said contact surface; and

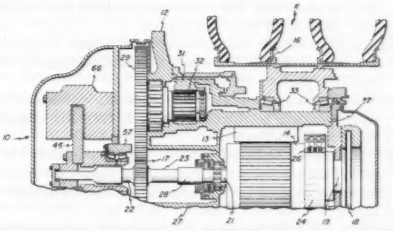


said bar having a pair of elongated grooves formed in the surface of the bar covered by said cap, the grooves being adapted to receive alignment pins for maintaining adjacent conductors in end-to-end alignment.

3,892,300
MOTORIZED WHEEL BRAKE SYSTEM

Martin Jay Hapeman, and Joseph Anthony Kobylinski, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Aug. 22, 1973, Ser. No. 390,552
Int. Cl. B60k 29/02, 7/00
U.S. Cl. 192—2 20 Claims



1. A motorized wheel drive system for propelling a vehicle comprising:

a. a frame adapted to be secured to the vehicle;

b. an electric motor mounted to said frame with its rotor aligned transversely to the direction of intended vehicle travel;

c. a drive shaft extending from one end of said rotor;

d. wheel means in outer concentric relationship to said motor and mounted so as to be rotatable in respect to said frame;

e. gear means drivably connecting said drive shaft to said wheel and comprising a sun pinion having first and second shaft portions extending from opposite sides of the pinion;

f. first coupling means drivably coupling said drive shaft to said first shaft portion so as to permit axial misalignment between said drive shaft and said first shaft portion;

g. braking means comprising a rotatable brake member secured for rotation about a predetermined axis;

h. second coupling means drivably coupled at one of its ends to said second shaft portion and at the other of its ends to said rotatable brake member so as to permit said second coupling means to be in axial misalignment with

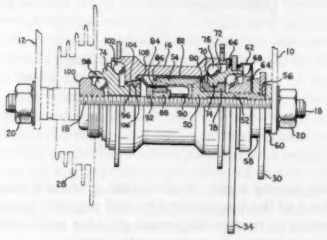
both said rotatable brake member and said second shaft portion whereby said sun pinion is free to float in its radial direction.

3,892,301

BICYCLE BRAKE

Karl Frei, Horseheads, and Gerald E. Ripley, Painted Post, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 29, 1971, Ser. No. 129,095
Int. Cl. F16d *67/02*
U.S. Cl. 192—6 R **1 Claim**



1. A bicycle hub contained drive and coaster brake mechanism comprising: a fixed axle adapted to be secured to the bicycle frame;

a wheel hub of generally cylindrical configuration rotatably mounted about said fixed axle;

bearing means supporting said wheel hub about said axle at each side thereof;

drive means rotatably supported on said fixed axle on one side of said wheel hub operative to rotate said wheel hub with rotation of the drive means;

brake fixed anchor means supported on said fixed axle on the other side of said wheel hub and adapted to be secured to the bicycle frame;

at least one arcuate brake shoe disposed within said wheel hub operative to selectively and frictionally engage the inner surface of said hub;

a brake torque reaction member fixedly connected to said brake anchor means and having at least one projecting finger restraining circumferential movement of said brake shoe;

a brake expander member concentrically mounted on said brake torque reaction member and movable in an axial direction to selectively force said brake shoe into and out of frictional engagement with said wheel hub; and

a rotatable brake actuating member concentrically disposed about said brake torque reaction member at the same hub side containing said brake anchor means; said brake actuating member having a threaded connection with said brake expander member to impart axial movement to said expander member in response to rotational movement of said rotatable brake actuating member.

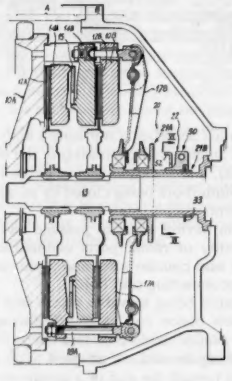
3,892,302

VEHICLE DISC CLUTCH WITH PLURAL RELEASE LEVERS

Michel Rist, Boulogne, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Jan. 22, 1974, Ser. No. 435,581
Claims priority, application France, Feb. 2, 1973, 73.03677
Int. Cl. F16d *25/04*
U.S. Cl. 192—91 A **17 Claims**

1. A clutch comprising two coaxial clutch assemblies each of the said clutch assemblies including a reaction plate adapted to be fastened for rotation with a first shaft, a friction disc movable axially with respect to the reaction plate and adapted to be fastened for rotation with a second shaft, a driven shaft to which both friction discs are fixed, a pressure plate movable axially with respect to the reaction plate and fastened for rotation thereto, resilient means urging the pressure plate toward the reaction plate in order to grip the friction discs, and at least one pivotally mounted clutch release lever, in combination with control means adapted to effect the pivoting of said at least one clutch release lever of each clutch assembly, in order to release the corresponding friction discs,



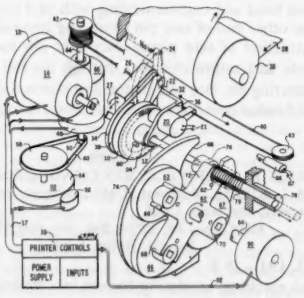
said control means including two operative elements mounted for movement parallel to the axis of the clutch, one said operative element acting on said at least one clutch release lever of a first one of said clutch assemblies axially in a first direction, and the other said operative element acting on said at least one clutch release lever of a second one of said clutch assemblies axially in a second direction opposite to said first direction, and operating means to effect the simultaneous operation of said two operative elements in opposite directions.

3,892,303

TYPE FONT CHANGING MECHANISM AND CONTROLS

Frederick P. Willcox, 565 Oenoke Ridge, New Canaan, Conn. 06840

Filed Apr. 3, 1973, Ser. No. 347,456
Int. Cl. B41j *23/04*
U.S. Cl. 197—18 **11 Claims**



1. In a printer for producing printing along a writing line on a recording material, and of the type having a changeable type font unit normally installed in operational position therein which can be removed therefrom and exchanged with a second font unit having a different set of characters, and having signal responsive means for effecting and controlling charac-

ter selection, printing and non-printing functions such as spacing, tabulation, line feeding the recording material, and the like, the combination comprising:

a. character selection means having driving means for positioning an installed type font unit to bring a selected character into position for the printing thereof;

b. carriage means, movable parallel to said writing line and along the length thereof, for supporting a type font unit in installed position in engagement with said driving means for character selection and in position for printing and spacing;

c. carriage positioning means for moving and incrementally positioning the carriage means to printing positions along the writing line, and also to a limit of travel in one direction which is at least one positioning increment beyond the end of the writing line whereat type font units can be exchanged; and

d. means for removing a type font unit from said installed position for exchange with a second font unit, and for installing said second font unit in said installed position, said means comprising said carriage means which does said removing as it approaches said limit of travel and, after said exchange, does said installing as it leaves said limit of travel,

e. said last-named means further comprising

1. means receiving a type font unit from the carriage means as it approaches the limit of travel, and holding said font unit when it is disengaged,

2. means exchanging said font unit with a second font unit, and

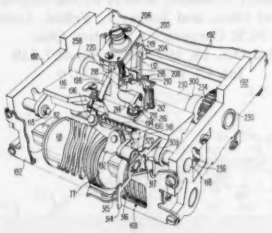
3. means positioning said second font unit for engagement with the driving means, and removal from said receiving and exchanging means by said carriage means as it leaves said limit of travel.

3,892,304

SINGLE PRINT ELEMENT PRINT CARRIER WITH SELF-CONTAINED SELECTION FUNCTION

Iraj D. Shakib, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,277
Int. Cl. B41j *23/04*
U.S. Cl. 197—18 **7 Claims**



1. A selection mechanism for a printer of the single element type, having a single print element carried by a print carrier, comprising:

a multicam surfaced rotational barrel cam rotationally and slideably supported for rotational movement and axial movement with respect to said carrier;

at least one selectably operable follower means spacially fixed with respect to said carrier for selective engagement with one of said surfaces;

means for creating motion between said selected follower means and said selected cam surface to create cam controlled motion of said cam with respect to said carrier;

said motion comprising an axial translation and reverse axial translation from and to a predesignated position;

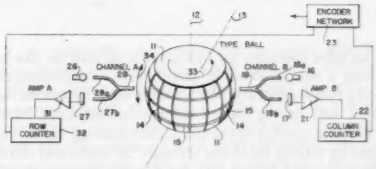
first means for transmitting said motion of said cam to a second means cooperating with said print element for converting said cam controlled motion of said cam into a selected directional rotational motion of said type element, thereby producing the selected rotation of said element in one of two selectable directions from an original at rest position, said selected rotation resulting from a single axial directional motion of said cam with respect to said follower means.

3,892,305

ELECTRICAL ENCODING ARRANGEMENT FOR TYPEWRITERS HAVING SINGLE ROTARY PRINTING ELEMENT

Leonard James Higgins, Watervliet, N.Y., assignor to Datacq Systems Corporation, Latham, N.Y.

Continuation of Ser. No. 3,782, Jan. 19, 1970, abandoned.
This application Feb. 9, 1973, Ser. No. 331,178
Int. Cl. B41j *1/60*
U.S. Cl. 197—52 **18 Claims**



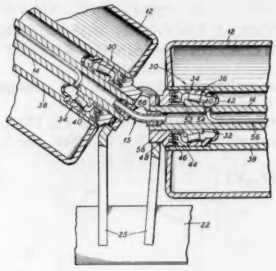
1. A typewriter for producing both hard-copy printout of data recorded with the typewriter and coded electric output signals representative of the characters being printed out, said typewriter assembly being of the kind having a single rotary printing element, encoding means driven synchronously with the single rotary printing element for encoding each individual character printing movement of the single rotary printing element with a unique and identifiable code, said encoding means comprising serially arrayed alternate light reflecting and minimal reflecting code marks physically arranged in predetermined sequential patterns representative of each individual character, a single electro-optic light responsive sensing device for each orthogonal direction of rotation of said rotary printing element, each of said signal light responsive sensing devices having a single light path coupled to said encoding means for serially sensing all of the respective code marks in sequence, and respective coded electric signal processing circuit means responsive to each of the single light responsive sensing devices for deriving serially coded electric output signals representative of the characters being printed-out by the single rotary printing element and suitable for use with electronic data processing systems.

16. A typewriter attachment according to claim 15 wherein each of the single electro-optic light responsive sensing devices comprises at least a source of light, light transmitting means forming a single light path for directing light from said source of light onto the pre-determined pattern of light reflecting and minimal light reflecting code marks as the same are moved serially past the light transmitting means, light receiving means for receiving back light pulses reflected from the code marks and directing the received light to a light sensitive member in said single electro-optic light responsive sensing device, said light sensitive member comprising a single photo-electric conversion element having a light sensitive surface that converts the received light pulses into corresponding serially coded pulsed electric output signals representative of characters being printed-out by the typewriter.

3,892,306
CONVEYOR LUBRICATION LINE CONNECTION ARRANGEMENT

Francois X. Bertaud, Aurora, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 30, 1972, Ser. No. 239,475
Int. Cl. F16n 7/24
U.S. Cl. 198—192 R 5 Claims



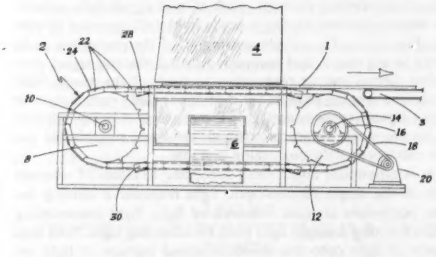
3. In an idler assembly for belt conveyors and the like having at least a pair of idlers in side-by-side relationship, each idler being rotably mounted on a hollow shaft by spaced bearing means and having means communicating each bearing means with the interior of the shaft, each bearing means being lubricated by forcing lubricant through the shafts and through the communicating means into the bearing means, the adjacent idler shafts being joined together, the improvement comprising:

a unitary flexible tube between the shafts, a compression fitting on each end portion of the flexible tube and connected to the adjacent shaft, said fitting having a portion crimped onto the flexible tube and in abutting sealing engagement with a portion of the hollow spindle.

3,892,307
CONVEYOR HAVING ADJUSTABLE FLIGHTS

Howard O. Scholl, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Sept. 5, 1972, Ser. No. 286,330
Int. Cl. B65g 15/30
U.S. Cl. 198—195 2 Claims

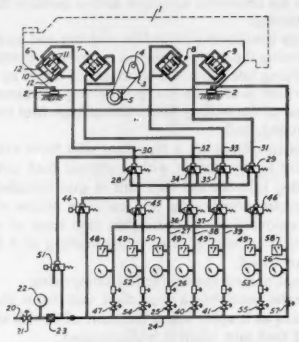


1. A conveying apparatus comprising: (a) an endless loop of rotatably mounted transversely extending conveyor flights; (b) means for moving said endless loop of rotatably mounted flights; and, (c) crank means for adjusting the rotatably mounted flights about their transversely extending axis, said crank means being attached at one end to a transversely extending flight and a longitudinally extending slidable member at the opposite end, the angular position of said flights being determined by the slidable movement of said longitudinally extending member.

3,892,308
CONTROL OF REVERSIBLE VIBRATORY EQUIPMENT

Preston Henry Schrader, Middletown, Ky., assignor to Rexnord Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 200,892, Nov. 22, 1971. This application July 2, 1973, Ser. No. 375,786
Int. Cl. B65g 27/00
U.S. Cl. 198—220 CC 4 Claims

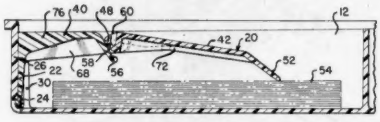


1. A method of controlling the vibration of an elastically supported work member in response to vibratory force of rotating eccentric weights journalled in the member and equipped with tunable dynamic absorbers arranged in sets each operative along a particular path that comprises, tuning a first set of said absorbers to oppose motion of said work member along a first path and simultaneously tuning a second set of said absorbers to form a two mass vibratory system to control the amplitude of the vibratory motion of said work member along a second path.

3,892,309
REPLACEABLE CURRENCY OR BILL HOLDER FOR A TILL TRAY

Donald E. Coffey, Vandalia; Robert E. Harrington, Miamisburg, both of Ohio, and Jeffrey L. Felton, Lansing, N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Oct. 18, 1973, Ser. No. 407,439
Int. Cl. B65d 1/34, 25/10
U.S. Cl. 206—74 16 Claims



11. The combination of a till tray having at least one currency compartment therein and a bill holder for said compartment;

said till tray having an end wall in said compartment with a vertically aligned recess therein;

said bill holder comprising bracket means having a leg portion for detachably securing said bill holder in said recess;

a bill lever means having a first end pivotally joined to said bracket means and a second end for contacting bills in said compartment;

said bracket means having a resilient means associated therewith; and

said bill lever means having means at said first end cooperating with said resilient means to resiliently urge said

second end into contact with said bills to resiliently compress and retain them in said comartment.

3,892,310

PACKAGE FOR WET NAPKIN

John Henrik Guy Welin-Berger, Box 88, 19063 Orsundsbro, Sweden

Filed Mar. 27, 1972, Ser. No. 238,265
Int. Cl. B65d *3/00, 5/54*
U.S. Cl. 206—210 2 Claims

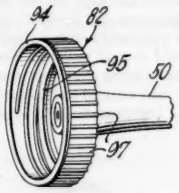
1. A package for disposable wet napkins comprising: a foil of generally tubular shape, circular in section, the foil having a longitudinal seal along a side of the tubular shape and a plane seal at one end, a cylindrical rigid insertable seal at the other end of the tubular foil, a rod of rigid material inside the package capable of functioning as a swab, and a disposable wet napkin formed into a cylindrical configuration within the tubular foil.

3,892,311

DISPOSABLE SYRINGE KIT

Vincent R. Sneider, 3422 Hallcrest Dr. N.E., Atlanta, Ga. 30319

Continuation-in-part of Ser. No. 153,885, June 16, 1971, abandoned, which is a continuation of Ser. No. 795,574, Jan. 31, 1969, abandoned, said Ser. No. 795,574 is a continuation-in-part of Ser. No. 704,105, Feb. 8, 1968, abandoned. This application Nov. 6, 1972, Ser. No. 304,115
1972, Ser. No. 304,115
Int. Cl. B65d *79/00;* A61m *3/00, 7/02*
U.S. Cl. 206—229 9 Claims



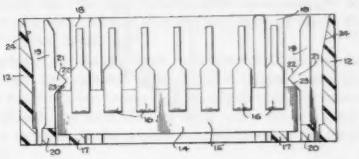
1. As an article of manufacture, a disposable syringe kit package containing a flexible and readily foldable bag having fluid-retaining properties and sized so as to be readily grasped and squeezed for the administration of the syringe, said bag being collapsed and compacted and having an open end of predetermined size, and removably attachable end-fitting means including a tubular sleeve sized to accept and removably retain said bag at said open end; said end-fitting means including a closure with a dispensing nozzle and a circumferential flange selectably securable in telescoped relation with only an end part of the tubular sleeve, said closure and sleeve having such a circumferentially continuous interfit when secured in sandwiched relation to the end of the bag that a liquid-sealed connection is established upon such assembly; said bag comprising a length of tubular plastic material closed only at one end, thereby defining said open end at the other end of said material, said length being of generally rectangular planiform when flattened in readiness for assembly to said end-fitting means, said bag being openably sealed at said open end and with a predetermined sealed content of water-soluble material.

3,892,312

INTEGRATED CIRCUIT CARRIER

Adam Tems, Philadelphia, Pa., assignor to Milross Controls, Inc., Southampton, Pa.

Filed June 11, 1973, Ser. No. 368,749
Int. Cl. B65d *85/00;* H01n *13/54*
U.S. Cl. 206—328 14 Claims



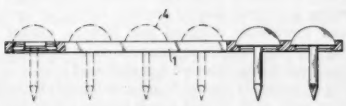
1. A dual-in-line integrated circuit carrier adapted to receive therein an integrated circuit module of the dual-in-line type including a dielectric body member encapsulating the integrated circuit and two parallel rows of longitudinally spaced circuit leads respectively disposed in opposed relation along opposite sides of said body member and extending upwardly therefrom, said carrier comprising a box-like structure having side and end walls defining therebetween an open-topped cavity, said structure being provided at its bottom end with support means for the module disposed in underlying relation with respect to the module body to support the same upon its flatwise insertion into the carrier with its leads extending upwardly, at least one pair of internal vertically extending grooves or channels respectively formed in the opposite side walls of the cavity in registering alinement with predeterminedly selected leads of the module for receiving said leads to limit end-wise shift of the module in the carrier, and means resiliently engageable with opposite ends of the module body to releasably hold the same captive in the carrier.

3,892,313

MAGAZINE STRIP FOR ORNAMENTAL NAIL DRIVING APPARATUS

Wilfried Lange, Altenhagen, Germany, assignor to Dieter Haubold Industrielle Nagelgerate, Hemmingen, Germany

Filed Mar. 8, 1973, Ser. No. 339,169
Claims priority, application Germany, Mar. 10, 1972, 2211511
Int. Cl. B65d *85/24*
U.S. Cl. 206—346 1 Claim



1. A magazine strip of cuttable material for nails having ornamental nail heads with rims, said strip comprising a plurality of apertures to receive each nail, each aperture having alternate upper and lower arcuate peripheral projections for engaging, supporting and locking said rims, said nail heads extending out of said strips.

3,892,314

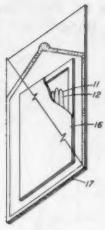
STERILE RUBBER GLOVE OR CATHETER PACKAGE

Bernard Albert Semp, Richmond, Va., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 117,998, Feb. 23, 1971, Pat. No. 3,728,739 which is a continuation-in-part of Ser. No. 770,792, Oct. 25, 1968, abandoned. This application Apr. 10, 1973, Ser. No. 349,890

Int. Cl. A61l *17/02*; A41d *19/00*

U.S. Cl. 206—363 7 Claims



1. A sterile surgical element package comprising a strippable laminate container having therein

a surgical element of natural or synthetic rubber;

having on the surface of said element in a small but lubricity imparting quantity;

a finely divided biodegradable powder consisting essentially of a polymer containing hydrolytically degradable glycolic acid linkages,

whereby in surgical use, any of the lubricity imparting powder which is transferred into a wound is readily absorbed by living tissue without adverse side effects.

3,892,315

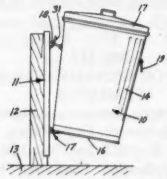
HOLDER

Anton E. Johnson, 1061 Rice Creek Ter., Fridley, Minn. 55432

Filed Aug. 27, 1973, Ser. No. 391,857

Int. Cl.[2] A47G *29/00*

U.S. Cl. 211—71 12 Claims



1. A holder for supporting a container having a bottom portion and a grip means adjacent the top portion of the container comprising: an elongated generally upright member adapted to be secured to a fixed support, said upright member comprising a channel shaped member having an upright front wall and rearwardly directed side flanges, corner sections securing the side flanges to opposite sides of the front wall, said front wall being recessed between said corner sections, a plurality of vertically spaced transverse bands extended across said front wall, each of said bands having a first end secured to one corner section and a second end secured to the other corner section, and vertically spaced transverse slots including an upper slot and lower slot for each band located between said bands and wall, means on the upper portion of said member engageable with the grip means for holding the container in a generally upright position, bracket means engageable with the bottom portion of the container for supporting the container, said bracket means having an inverted U-shaped hook positioned about a band with parts of the hook extended through said upper and lower slots and engageable with said front wall to mount the bracket means on the upright member, said hook having a width substantially the length of the slot, and said hook adapted to be selectively positioned about a band to change the location of the bracket means on the upright member whereby different sized containers can be supported on the holder.

3,892,316

CRANE WITH FOLDING MAST AND JIB

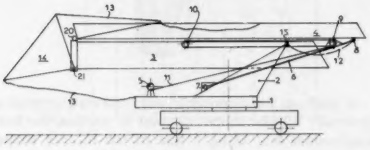
Jean Noly, La Clayette, France, assignor to Potain, Chevilly Larue (Val de Marne), France

Filed Jan. 11, 1973, Ser. No. 322,664

Claims priority, application France, Jan. 14, 1972, 72.01979

Int. Cl. B66c *23/68*

U.S. Cl. 212—46 R 7 Claims



1. A folding crane including an undercarriage, a stand integral with said undercarriage and provided at its top with a first transverse pivot pin, a mast having a top portion and a lower portion, the lower portion of said mast being pivotally mounted on said first pivot pin for movement between a vertical working position and a horizontal transport position, a second transverse pivot pin secured to the top portion of said mast, a jib pivoted to the top of said mast on said second pivot pin and capable of being folded back horizontally against said mast in the transport position, a raising winch carried by said undercarriage, a third pivot pin on said stand adjacent said undercarriage, a compensation bar having an upper end and a lower end, said lower end of said bar being pivoted to said third pivot pin, means secured to the upper end of said bar for movement along a side of said jib which is disposed adjacent said mast in the transport position, first pulley means carried by said compensation bar adjacent the upper end thereof and second pulley means carried by said mast between said first and second pivot pins, said winch including a cable extending about said first and second pulley means, a flexible member having one end secured to the top end of said compensation bar and the other end secured to said stand to limit the pivotal movement of said compensation bar as said cable is taken up by said winch.

3,892,317

HORIZONTAL MANIPULATION ARM

Bernard Veron, Savigny Sur Orge, France, assignor to Groupement pour les Activities Atomiques et Avancees, LePlessis Robinson, France

Filed June 19, 1974, Ser. No. 480,773

Claims priority, application France, June 29, 1973, 73.23976

Int. Cl. B66c *1/10*

U.S. Cl. 214—1 BC 6 Claims

1. Horizontal manipulation arm (1) ensuring the passing, by retraction, rotation and extension of the said arm, from one work unit to another, comprising essentially:

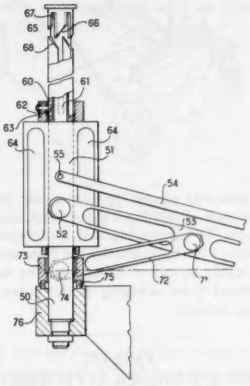
a fixed, vertical column (50) having a circular cross-section,

a sleeve (51) slidable along the vertical column (50) and rotatable thereabout,

means (64) for driving the sleeve in a linear movement along the vertical column,

a connecting rod (53), connected, at one of its ends, to said sleeve and supporting, at the other end, a prehension means (57),

a link (72) whose length is equal to half that of the connecting rod (53) having one of its ends pivotably connected at a point (74) by means rotatably about but longitudinally fixed on the vertical column and the other end pivotably connected to the middle of the connecting rod (53),



vertical groove means 6 on said column (50),

a roller (62) movable with the sleeve (51) and slidable within said groove means (6) of the vertical column, and helical ramp means (7, 9, 11, 13) joined to one end of said groove means so as to guide the manipulation arm (1) in a rotating movement through a predetermined angle about the axis (yy') of the column (50) as the sleeve is slid therealong.

3,892,318

DEVICE FOR STACKING BRICKS IN LAYERS

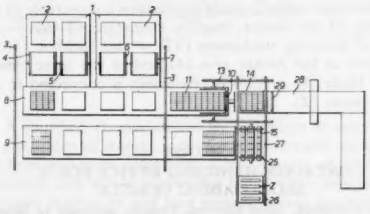
Walter Berndt, Laggenbeck, Westfalia, Germany, and Helmut F. Lauff, Furlong, Pa., assignors to C. Keller & Co., Westfallen, Germany

Filed Apr. 19, 1974, Ser. No. 462,514

Claims priority, application Germany, Oct. 26, 1973, 2353752

Int. Cl. B65g *57/24*

U.S. Cl. 214—6 A **3 Claims**



1. A device for forming a stack of bricks comprising a plurality of first layers of bricks, a second layer of bricks in which passages are provided to receive the arms of fork-lifting means, and an intermediate layer arranged between the second layer and the first layers above the second layer, said device comprising

first and second conveyor means,

first gripper means operative to deposit layers of bricks on the first conveyor means and to deposit layers of bricks on the second conveyor means,

stop means for the brick layers, said stop means being arranged at the downstream end portion of the first conveyor means,

a stacking table arranged to be lowered stepwise,

second gripper means operative to transfer layers of bricks from the first conveyor means and to deposit same on the stacking table whereby to form the first layers,

gap-forming means arranged beyond the downstream end portion of the second conveyor means, said gap-forming means including

stop means for the brick layers on the second conveyor means, said gap-forming means being movable in the direction of movement of the second conveyor means to separate the bricks in order to form said passages in the layer of bricks thereon whereby said layer of bricks forms said second layer, and

third gripper means operative to remove one said intermediate layer from a stack thereof and to deposit same on the said second layer present on the gap-forming means, and to deposit the said second layer with the intermediate layer thereon on the uppermost first layer on the stacking table.

3,892,319

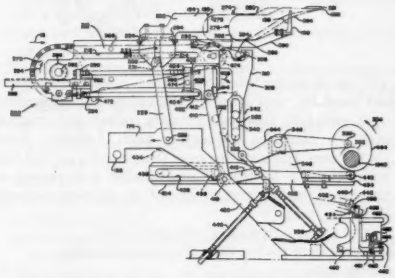
FEED, TRANSPORT AND DELIVERY MECHANISM FOR BOOK TRIMMERS AND THE LIKE

Ernest J. Sarring, Western Springs, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 114,225, Feb. 10, 1971, Pat. No. 3,722,336. This application Oct. 16, 1972, Ser. No. 298,131

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 F **11 Claims**



1. A mechanism for feeding objects to another means comprising, a hopper for holding a stack of the objects;

a pusher for pushing an object from a stack location beneath the stack to a first station; said pusher comprising, an abutment surface supported by an arm; said pusher arm being capable of horizontal traversal under the influence of a horizontal traverse means thereto connected, and being movable from said stack location in a direction so as to push an object to said first station, and being movable in a recovery direction;

said pusher arm being pivotally mounted on a pivot mount so as to be pivotal vertically, for raising and lowering said abutment surface; a pusher elevator connected with said pusher arm for pivoting same;

said pusher elevator comprising a link which is mounted to pivot in a plane parallel to the plane in which said pusher arm pivots; said elevator link being connected to said pusher arm to pivot same;

a drive link connected with said elevator link for causing same to pivot; a cam surface in engagement with said elevator link drive link for operating same to drive said elevator link in one direction and a biasing means con-

nected with said elevator link for driving said elevator link in the other direction, alternately raising and lowering said pusher arm;

said elevator link including an elongated receiving means for connecting with said pusher arm; said pusher arm engaging said elevator link through said receiving means; said receiving means being elongated along a path paralleling the horizontal traverse of said pusher arm, whereby said pusher arm can remain in operative engagement with said elevator link over its entire horizontal pathway;

said elevator link being a parallel link so that while it pivots vertically, the entire length of said receiving means moves through the same height location at the same time.

3,892,320

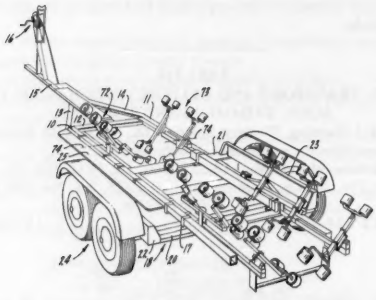
BOAT TRAILER WITH MULTIPLE ROCKING BOOM SUSPENSION

Benjamin T. Moore, Box 4513, Fort Worth, Tex. 76106

Filed Mar. 29, 1974, Ser. No. 456,170

Int. Cl. B60p *3/10*

U.S. Cl. 214—84 **14 Claims**



1. For use in an over-the-road trailer, a rocking cradle load support assembly, said assembly including, in combination,

a rigid, generally U-shaped primary rocker arm structure,

means for pivotally connecting said U-shaped primary rocker arm structure to a base structure for pivotal movement about a horizontal axis located transversely with respect to the longitudinal axis of the primary rocker arm structure, and,

a pair of secondary rocker arm structures,

each secondary rocker arm structure including

a rocker arm,

means for pivotally connecting said rocker arm to a leg of the U-shaped primary rocker arm structure, and

a pair of load contacting support assemblies, one support assembly being located on each side of the point of connection of the rocker arm to its associated leg of the U-shaped primary rocker arm structure,

each support assembly being pivotable about both a generally horizontal longitudinal axis, and a generally horizontal transverse axis, whereby it can be adjustable to conform, moment to moment, to variations in the contour of the supported load.

3,892,321

MOTORCYCLE CARRIER FOR WRECKERS

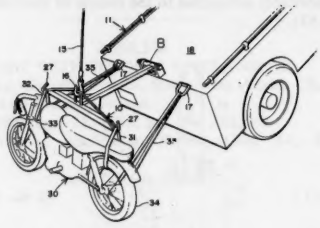
Edward L. Westbrook, Jr., 6049 W. 14th Ln., Hialeah, Fla. 33012

Filed Nov. 1, 1974, Ser. No. 520,109

Int. Cl.² B60P *3/12*

U.S. Cl. 214—86 A **4 Claims**

1. A motorcycle carrier for wreckers comprising an elongated tow bar, a bracket adapted to be mounted on the rear portion of the wrecker, connecting means mounted at one end of said tow bar rotatably secured to said bracket, a cross member mounted at the other end of said tow bar, closed hook means mounted on said cross member in substantially vertical alignment with said tow bar and extending upwardly at an obtuse angle thereto for receiving a winch hook for lifting said motorcycle above the ground, open hook means



mounted at each end of said cross member, strap means extending about each of said hook means and adapted to engage said motorcycle for supporting said motorcycle and further means extending from substantially the front and rear portions of said motorcycle to said wrecker whereby said motorcycle will be prevented from swinging as the motorcycle is being carried by said wrecker.

3,892,322

SCRAPER AND DIGGER ATTACHMENT FOR A TRACTOR LOADER

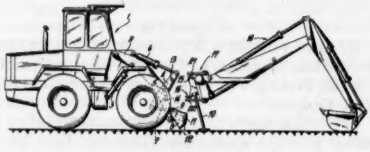
Alfons Drennhaus, Holzbuttgen, Germany, assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 7, 1974, Ser. No. 431,463

Claims priority, application Germany, Mar. 29, 1973, 2315581

Int. Cl. E02f *3/30*

U.S. Cl. 214—131 A **12 Claims**



1. Loader with a pair of loading booms raisable and lowerable by means of a pair of lifting cylinders, a rocker arm carried between and pivotally mounted to the booms to control an implement connectable to the front end of the booms, and a backhoe having a swing mechanism connectable to the front end of the loader, thereby characterized that — by means of its swing mechanism (**17**) — the backhoe (**18**) is connected to the rocker arm (**4**) and at the same time a scraper blade (**8**) or similar implement is connected to the loading boom (**2**).

3,892,323

CONTAINER-HANDLING DEVICE FOR A SELF-LOADING VEHICLE

Antoine Corompt, Saint-Etienne, France, assignor to Bennes Marrel, Saint-Etienne (Loire), France

Filed Apr. 24, 1974, Ser. No. 463,621

Int. Cl. B60p *1/28*

U.S. Cl. 214—505 **4 Claims**

1. Container-handling device for a self-loading vehicle, comprising:

an L-shaped bracket having an upper and a lower arm perpendicular to each other with the free end of said

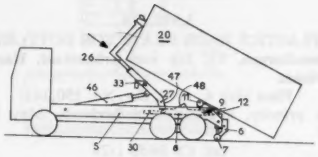
upper arm provided with a container handling hook, and one lower arm adapted to slide inside a tiltable sleeve;

a tiltable sleeve mounted longitudinally on the vehicle, with its rear end pivoted on the front end of a tiltable connecting frame;

a tiltable connecting frame the rear end of which is pivoted to the rear part of the vehicle chassis;

independent selectively operable hydraulic rams for sliding said L-shaped bracket in said tilting sleeve and for pivoting said tiltable sleeve with respect to the vehicle chassis;

a container having at its front end a loop member for receiving said handling hook, and at least two lower longitudinal beams under its floor wall,



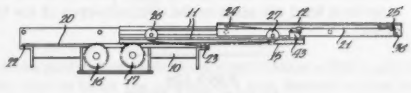
characterized in that the rear part of the vehicle chassis has at least two tiltable bogie each of them provided with at least two rollers so that each container longitudinal beam rolls on the rollers of its own bogie during loading and unloading operations, while on said tiltable sliding sleeve is pivoted a locking hook adapted to engage a nose member at the front end of said tiltable connecting frame in order to keep said tiltable sleeve in line with said tiltable connecting frame when said container is used as a dumping bucket on said vehicle, means for automatically disengaging said locking hook when said lower arm is beginning to slide into said tiltable sleeve for initiating an unloading operation.

3,892,324

SHUTTLE FORK MECHANISM WITH PROBE MEANS

Vincent R. Faletti, Jr., Spring Valley, Ill., assignor to Conco Inc., Mendota, Ill.

Filed Sept. 7, 1973, Ser. No. 395,633
Int. Cl. B66f 9/14
U.S. Cl. 214—730 **18 Claims**



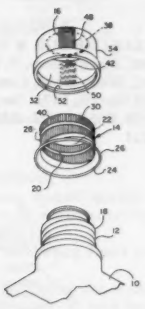
1. A shuttle fork mechanism for operation in association with a plurality of storage racks for insertion and removal of loads from said racks comprising, a base section, an intermediate section and a load-supporting top section mounted for movement relative to said base section, means for extending said intermediate and top sections relative to the base section with the top section moving relative to the intermediate section, movable means carried by and at the outer end of the top section for detecting the presence of an obstruction in a storage rack, and means operable in response to movement of the top section relative to the intermediate section for temporarily moving said detecting means to a detecting position extending outwardly from the top section.

3,892,325

CHILD PROOF CONTAINER CLOSURE

Daniel J. Maguire, Blue Bell, Pa., assignor to Closure Industries, Inc., Brooklyn, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,963
Int. Cl. B65d 55/02, 85/56; H61j 1/00
U.S. Cl. 215—219 **3 Claims**



1. In a child proof container closure, the combination of

A. a cap threadedly engaged upon the container,
   1. said cap including a generally cylindrical sidewall,
   2. said sidewall terminating downwardly in a peripheral lip and upwardly in a cap top,
      a. said lip projecting outwardly beyond the periphery of the said sidewall,
   3. a portion of the sidewall near the top being knurled continuously about the periphery for turning purposes;

B. a resilient cover overfitting the cap,
   1. the said cover being normally rotative relative to the cap,
   2. said cover including a generally cylindrical sidewall, the cover sidewall terminating downwardly in an open bottom and upwardly in a cover top;

C. cap engaging means provided in the cover to hold the cover in rotative association with the cap,
   1. the cap engaging means being formed in the cover sidewall,
   2. the cap engaging means including an inwardly open peripheral groove,
      a. the said groove being outwardly closed by a peripheral groove bottom,
   3. the groove receiving the peripheral lip therein,
   4. the groove being of sufficient diameter to overfit and receive therein the cap lip in a rotary sliding engagement, said cap and said cover having no relative axial movement therebetween; and

D. gripping means formed in the cover to grip the knurled portion of the cap upon the application of radially inwardly directed forces upon the cover,
   1. said gripping means including a diametrically opposed pair of projections extending inwardly from the cover sidewall,
      a. the projections defining a diametrical distance therebetween that is normally slightly greater than the diametrical distance across the cap at the knurled portion thereof whereby the cover may be turned relative to the cap without the projections engaging upon the knurled section,
      b. the projections being positioned in the cover sidewall adjacent the said cover top and extending downwardly therefrom,
      c. the projections radially outwardly overlying at least part of the knurled portion of the cover to engage therein for cover turning purposes,

2. said gripping means including diametrically opposed grasping areas provided in the exterior of the cover,
   a. each grasping area being in radial alignment with a projection wherein the application of radially inwardly directed forces upon the cover at the grasping areas causes the cover sidewalls to deform until the projections engage any portion of the knurled portion of the cap.

3,892,326

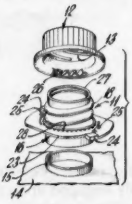
SAFETY CLOSURE FOR A METAL CONTAINER

Seth R. Schneible, South Salem, N.Y., assignor to Eyelet Specialty Co., Inc., Wallingford, Conn.

Filed Nov. 9, 1973, Ser. No. 414,448

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

U.S. Cl. 215—221 **3 Claims**



1. In combination, a metal container including a threaded neck part, said part comprising a cylindrical portion having said threads predominantly near the dispensing end and having means for attachment to a container-body part at the other end, there being an intermediate region of axial separation between the region of said attachment means and the region of said threads, first and second outwardly projecting bead means at each of two axially spaced radial planes of said intermediate region between said first and second bead means, said key means projecting outwardly at least substantially to the extent of radial projection of that one of said first and second bead means which is more near said threads, a plastic locking ring of relatively stiffly yieldable material having a splined bore engaged to said intermediate region and to said key means, said locking ring being axially confined by said first and second bead means, and a closure cap having a threaded bore coacting with the threaded region of said neck part, said cap and ring having releasable formations engageable with escaping ratchet action upon approach to the fully engaged relation of said threads and cap, said bead which is more near to said attachment means being of greater maximum diameter than the other of said beads, whereby said greater-diameter bead may act as a stop for assembling application of said ring over said lesser-diameter bead and into said keyed enegagement.

3,892,327

COVER, ESPECIALLY FOR PLASTIC CONTAINERS

Wilfried Leitz, Kapellenstrasse 2, 7812 Bad Krozingen, Germany

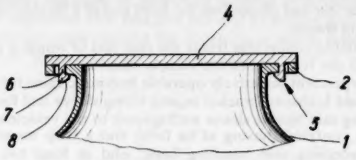
Filed June 24, 1974, Ser. No. 482,394

Claims priority, application Germany, June 27, 1973, 2332714

Int. Cl. B65d *41/32*

U.S. Cl. 215—253 **9 Claims**

1. A container seal with a cover capable of being fastened on the container orifice by snapping it on, characterized in that the container orifice is surrounded by a flange having a rim of through perforations pierced axially, said cover having a rim of integral resilient barbs corresponding to said perforations, said barbs passing through said perforations and



adapted to latch beneath the flange when the cover is placed on the container.

3,892,328

PLASTICS MADE CRATE FOR BOTTLES

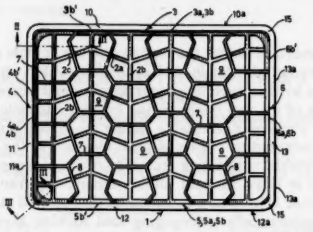
Zwier Steenbergen, 15, Jan van Arkelstraat, Hardenberg, Netherlands

Filed May 4, 1972, Ser. No. 250,242

Claims priority, application Netherlands, May 5, 1971, 7106121

Int. Cl. B65d *1/24*

U.S. Cl. 220—21 **5 Claims**



1. A plastic crate for bottles comprising
a bottom
first upright side walls projecting from two opposite edges of said bottom and having upper ends which converge towards each other
second upright side walls, projecting from two other opposite edges of said bottom, and having upper ends which converge towards each other
corner bridge parts which interconnect adjacent first and second side walls, said bridge parts diverging outwardly, said side walls and bridge parts arranged so that the circumference of the crate in any plane parallel to the bottom is at least the same as the circumference at the bottom.

3,892,329

VAPOR SEAL UNIT

Anton F. Panacek, Harbourton Woodsville Rd., Box 191, R.D. 1, Lambertville, N.J. 08530

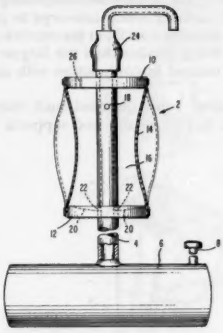
Filed Mar. 29, 1974, Ser. No. 456,147

Int. Cl.[2] B65D *25/00;* **F16L** *55/04*

U.S. Cl. 220—85 VR **2 Claims**

1. In combination with a tank for volatile liquid having an inlet and a vent pipe, a vapor seal device located above said tank and embodying a normally closed chamber adapted to receive and retain vapors arising from said tank, there being a passage from said vent pipe opening into the upper portion of said chamber for the delivery of vapors to the chamber and a return passage leading from the lower portion of said chamber to said vent pipe for return of liquid to the tank, a wall of said chamber being formed of flexible material and subjected exteriorly to atmospheric pressure which being subjected

interiorly to the pressure of vapors in said vent pipe, said wall being movable in response to variations in such pressures to vary the capacity of said chamber, a check valve communicating with said chamber and operable to relieve excessive pressure developed in said chamber and a second check valve operable to admit ambient air to said chamber upon reduction in pressure in the chamber below a predetermined minimum whereby rupture of the flexible material forming said wall is prevented.



3,892,330

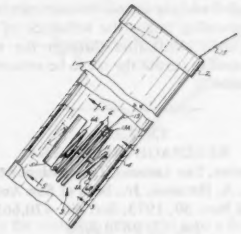
VEHICLE ANTI-SIPHONING DEVICE

Manford D. Hotchkiss, 879 J St., and Ronald G. Proctor, 999 9th St., both of Washougal, Wash. 98671

Filed Apr. 24, 1974, Ser. No. 463,521

Int. Cl. B67c *3/00*

U.S. Cl. 220—86 AT **7 Claims**



1. An anti-siphoning device for installation within a gas tank filler pipe to block the passage of a pipe inserted siphon hose without obstructing normal gasoline passage, said device comprising,

a spiral spring in lengthwise compression with the axis of said spring disposed transversely within the filler pipe,

end members oppositely mounted to the ends of said spring confining same in compression to permit insertion and passage of the device along the filler pipe,

retention means extending intermediate said end members holding same against the biasing action of the spring, said retention means including a component soluble upon contact with gasoline for disconnecting said end members permitting spring expansion and forceful seating of the end members into engagement with the filler pipe, and

the expanded spring having spaced apart coil segments extending transversely across the interior area of the pipe to prevent hose passage.

3,892,331

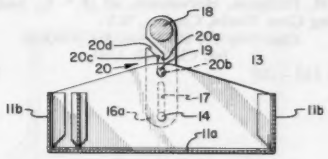
TOOL BOX TRAY

Roy Z. Beck, 360 West 2650 North, Layton, Utah 84041

Filed Aug. 20, 1973, Ser. No. 390,100

Int. Cl. B65d *25/28*

U.S. Cl. 220—96 **2 Claims**



1. A tool box tray comprising

a box having a bottom, spaced upright side walls and spaced, upright end walls interconnecting the bottom and side walls, and an open top;

a handle including a bar having risers connected to the opposite bar ends;

means for pivotally connecting the ends of said handle risers, opposite to said bar, to said box such that said handle is pivotable between an elevated attitude wherein the risers form an angle normal to said box bottom and the bar is spaced above the walls, and a folded attitude where the handle rests within said box at the level of the walls, said means comprising

a pair of spaced, transversely extending wall sections, upstanding from the box bottom,

a pair of aligned pivot posts each projecting from one of said walls, and

a longitudinal elongate pivot slot in each riser, each said slot fitting over one of said pivot posts, and means to hold said risers on said pivot posts; and

releasible locking means for maintaining said handle in said elevated attitude, said releasible locking means being spaced from said means for pivotally connecting the ends of said handle risers to said box.

3,892,332

PONTOON TYPE FLOATING ROOF FOR LIQUID STORAGE TANK

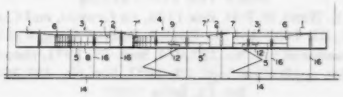
Masao Iwagami, Tokyo, and Satoshi Miyashita, Yokohama, both of Japan, assignors to Chiyoda Kako Kensetsu Kabushiki Kaisha, Japan

Filed Oct. 17, 1973, Ser. No. 407,272

Claims priority, application Japan, Oct. 20, 1972, 47-104395

Int. Cl. B65d *87/18*

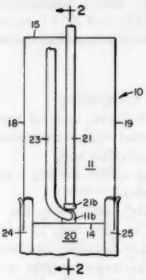
U.S. Cl. 220—219 **12 Claims**



1. A pontoon type floating roof for liquid storage tanks comprising a pontoon, at least one annular tension buffer assembly concentrically disposed within and with respect to the pontoon, and roof decks located at or under the level of liquid stored in a tank extending between the pontoon and the annular tension buffer assembly and also within the annular tension buffer assembly, the roof decks having a lower surface in continuous contact with the stored liquid to prevent the formation and accumulation of vapor under the decks, and wherein the pontoon and the annular tension buffer assembly

include elastically deformable side walls to which the roof decks are connected.

3,892,333
CONTAINER AND METHOD OF USING SAME
Howard S. Best, Horseheads; Daniel J. Bustraan, Big Flats, and Paul H. Philippon, Horseheads, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed May 17, 1974, Ser. No. 470,835
Int. Cl. B65h *3/60*
U.S. Cl. 221—200 **3 Claims**



1. In a container for tubular-like articles and including front, back, two sides and one end enclosed with the end opposite the enclosed end being open and a plurality of baffles arranged on the interior surfaces of said front and back to provide a sinusoidal-like pathway between said ends, such pathway being of a size to permit said articles to pass or flow therealong freely due to gravity, the improvement comprising;

A. a plurality of holes embodied in and extending through the walls of said front and back of said container with one such hole located immediately above the center of the upper surface of each said baffle when the container is vertically disposed with said open end being the lower end thereof, said holes being provided for issuing jets of aeriform fluid therethrough to provide an agitation and lubrication effect to articles in said container and thereby aid in free flow of such articles; and

B. a hole embodied in and extending through one of said walls of said container opposite one of said baffles near said lower end of the container, such hole being provided on the vertical centerline of said wall for issuing a jet of aeriform fluid therethrough for stopping a leading article of said articles and thereby stopping said free flow of all of the articles.

3,892,334
GOLF TEE CONTAINER
Claude E. Hand, II, P.O. Box 1106, La Grande, and Claude E. Hand, III, 1402 3rd St., Eugene, both of Oreg. 97850
Continuation of Ser. No. 183,974, Sept. 27, 1971, abandoned. This application Sept. 27, 1973, Ser. No. 401,254
Int. Cl. B65g *59/00*
U.S. Cl. 221—281 **2 Claims**

1. A golf tee container for receiving a plurality of tapered golf tees and orienting same for manual removal in a one-at-a-time fashion, said container comprising:

an open-ended tubular member of transparent plastic material having a length and diameter suitable for loosely receiving a plurality of stacked golf tees, said tubular member being adapted for upright attachment to a supporting surface, and

a pair of identical tee retainers located at the upper and lower ends of the tubular member, each retainer being of one-piece molded plastic material and including:

first annular internal wall means adhesively secured adjacent a respective end of said tubular member, and

an end wall disposed perpendicular to said first internal wall means and having second annular internal wall means arranged co-axially with said tubular member, said second internal wall means comprising inner and outer beveled surfaces which converge to produce an annular edge defining a resilient tee-receiving opening, said opening being smaller than the largest cross-section of a tee utilized in conjunction with said tubular member;

the lower tee retainer being disposed such that the inner beveled surface thereof retains and supports the lower-

most tee of a stack of tees in said tubular member such that a shank portion of the lowermost tee projects outwardly beyond said tee-receiving opening in an operable orientation of said tee container;

the outer beveled surface of said upper retainer being resiliently compressible under the influence of a tee being manually pushed shank-first through the tee-receiving opening thereof to permit the tee to be inserted into said tubular member;

the inner beveled surface of said lower retainer being resiliently compressible under the influence of a tee being manually pulled shank-first through the tee-receiving opening thereof to permit the tee to be removed from said tubular member.

3,892,335
BEVERAGE DISPENSER
Alfred A. Schroeder, San Antonio, Tex., assignor to William V. Braley and R. A. Harman, Jr., both of San Antonio, Tex.
Filed Nov. 30, 1973, Ser. No. 420,665
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.1 **10 Claims**

1. A beverage dispenser for dispensing cool beverages from a supply stored at ambient temperatures, said dispenser comprising:

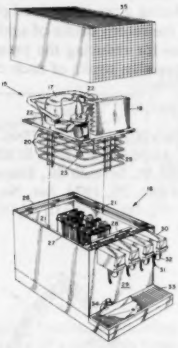
a receptacle having a wall and containing a cooling liquid;

beverage conduits for conducting said beverages through said receptacle, said beverage conduits being immersed in said liquid and located around the center of said receptacle;

cooling unit for cooling said liquid having cooling conduits immersed in said liquid around said beverage conduits, said cooling unit being removable without disconnecting said beverage conduits;

a baffle plate in said receptacle adjacent to but spaced from said wall providing a tempering space, said beverage conduits passing through said tempering space for a substantial distance and then exiting from said receptacle said baffle also permitting a circulation of said cooling liquid between said tempering space and said cooling conduits, said baffle plate protecting said beverage conduits from

freezing, yet helping to maintain every dispensed drink below a predetermined temperature for serving; and



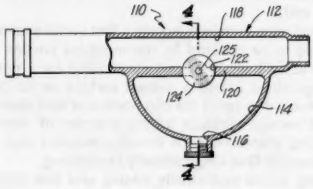
means for dispensing said cool beverages from said beverage conduits.

3,892,336

DISPENSING DEVICE HAVING A ROTOR FOR METERING A MATERIAL INTO A FLUID STREAM

William R. Butler, 1401 N. Decatur Blvd., Las Vegas, Nev. 89108

Filed May 10, 1974, Ser. No. 468,928
Int. Cl. B05b 7/28
U.S. Cl. 222—193 **6 Claims**



1. In a device for metering a material into a fluid stream, the combination of:

a. a reservoir for the material;

b. passage means for the fluid stream adjacent said reservoir;

c. means separating said passage means from said reservoir and having a connecting passage therethrough between said passage means and said reservoir;

d. a rotor in said connecting passage and having a generally arcuate surface projecting into said passage means and exposed to the material in said reservoir and rotatable by a fluid stream flowing through said passage means to transfer the material from said reservoir to the fluid stream flowing through said passage means, said connecting passage being complementary to and partially housing said rotor and having at least one arcuate wall conforming to and in close proximity to said arcuate surface of said rotor; and

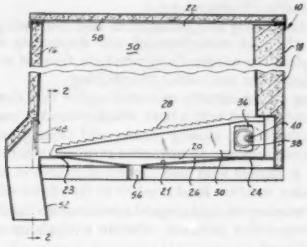
e. means for substantially preventing flow through said connecting passage from said reservoir to said passage means when metering of the material is not desired.

3,892,337

BIN ICE DELIVERY MECHANISM

Charles G. Neumann, Palatine, Ill., assignor to Reynolds Products Inc., Schaumburg, Ill.

Filed Nov. 21, 1973, Ser. No. 417,875
Int. Cl. F25c 5/18
U.S. Cl. 222—199 **14 Claims**



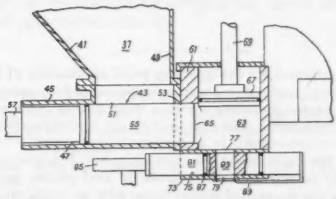
1. Apparatus for storing a supply of ice in pieces and for delivering pieces of ice from said supply including in combination, a generally rectangular container for holding a supply of ice in pieces, said container having a front wall and a back wall, each of said front and back walls being slightly inwardly directed from the bottom thereof to the top thereof, said container having a bottom, said container formed with a delivery opening adjacent to said bottom, a plurality of ice delivery members, means mounting said members on said bottom for movement toward and away from said delivery opening, and means for driving said members to move pieces of ice from said supply toward said delivery opening.

3,892,338

MEANS FOR DISPENSING METERED QUANTITIES OF FOOD PRODUCTS FROM A RESERVOIR TO A RECEPTACLE

Frederick Ranson Trueman, 11, High St., Fareham; Roy George Swain Couzens, 3, Charlesworth Grdns., Waterlooville, and Brian Henry Islip, 11, High St., Fareham, all of England

Filed Jan. 26, 1973, Ser. No. 327,103
Claims priority, application United Kingdom, Jan. 26, 1972, 3740/72
Int. Cl. G01f 11/06
U.S. Cl. 222—254 **6 Claims**



1. A dispenser for a food product which comprises a solid or a highly viscous liquid, the dispenser comprising:

a dispensing chamber having an inlet and an outlet for the said product;

means for supplying the said product to said dispensing chamber via said inlet and for closing said inlet after a predetermined quantity of the said product has entered said chamber;

a dispensing member slidably mounted within said dispensing chamber and acting, upon movement towards said

outlet, to force food product within said dispensing chamber outwardly via said outlet;

a closing cylinder disposed adjacent to said dispensing chamber with the axis thereof extending transversely of the direction of movement of said dispensing member within said dispensing chamber and including a pair of aligned apertures formed in opposite sides, respectively, of said closing cylinder comprising said outlet of said dispensing chamber; and

means for closing said outlet from said dispensing chamber after the said movement of said dispensing member is complete, to substantially preclude flow of excess food product from said outlet, comprising:

a closing piston slidably mounted within said closing cylinder and formed with a bore which extends transversely of the axis of said closing piston, said closing piston being movable between an operative position, wherein the said bore is aligned with said aligned apertures in said closing cylinder, to allow food product to flow from said dispensing chamber via said aligned apertures and said bore, and an inoperative position, wherein said piston closes said outlet; and

a cut-off plate secured relative to said closing piston for sliding movement therewith, said cut-off plate being moved across the path of food product emerging from said outlet from said dispensing chamber during movement of said closing piston towards the said inoperative position thereof, to crop the said food product emerging from said outlet.

3,892,339

EQUIPMENT FOR POINT BY POINT APPLICATION OF AN ADHESIVE

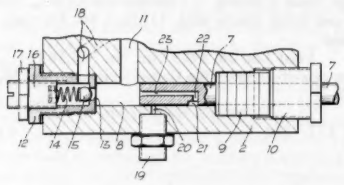
Horst Idler, Grossheppach, Germany, assignor to Hans Paal, Grossheppach, Germany

Filed Nov. 5, 1973, Ser. No. 412,829

Claims priority, application Germany, Nov. 4, 1972, 2254033

Int. Cl. G01f *11/00*

U.S. Cl. 222—318 **6 Claims**



1. Apparatus for the point by point application of a viscous substance, such as a thermoplastic adhesive, comprising a feeder device including a piston slidable in a cylinder, means for reciprocating said piston through a compression stroke and a return stroke in a predetermined timed work cycle, means for introducing the substance into the interior of said cylinder during the return stroke of said piston, means connecting the interior of said cylinder with an application nozzle whereby the substance is moved under pressure from said cylinder to said nozzle during the compression stroke of said piston, means blocking said connecting means except during the end phase of the compression stroke and the beginning phase of the return stroke of said piston, said connecting means including a conduit extending through said piston into the interior of said cylinder and a bore extending through said cylinder communicating with said nozzle, said conduit including a first section which extends axially through said piston and a second section extending transversely from said first section to an opening in the outer surface of said piston, said opening being defined by a slot extending axially along the surface of said piston and adapted to be positioned in communication with said bore during the end phase of the compression stroke and the beginning phase of the return stroke of said piston, said slot extending for a greater axial dimension than said bore whereby the communication therebetween will be maintained during a predetermined phase of the compression stroke and the return stroke of said piston, and pressure responsive means for reducing the pressure in said cylinder during the compression stroke of each cycle.

3,892,340

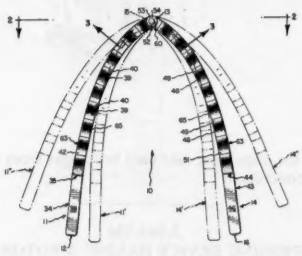
SEWING AID DEVICE FOR SETTING A SLEEVE IN THE ARMHOLE OF A BODICE

Regina Reidy, 258 W. Seventh St., Emporium, Pa. 15834

Filed Oct. 29, 1974, Ser. No. 518,566

Int. Cl. A41h *43/00*

U.S. Cl. 223—1 **11 Claims**



1. A sewing aid device for setting a sleeve in the armhole of a bodice, comprising:

an elongated first strip member having a first end and a second end;

an elongated second strip member having a third end and a fourth end,

each of said strip members having a first surface on one side arranged to be covered by the marginal portion of said bodice at said armhole, and also having for a portion of its longitudinal extent a second surface on its opposite side arranged to cover the cap portion of said sleeve, each of said second surfaces having a series of depressions extending transversely of its strip member and spaced from one another longitudinally therealong;

connecting means operatively joining said first strip member proximate said second end thereof to said second strip member proximate said third end thereof to enable said first and fourth ends to be moved toward and away from one another;

means for holding such bodice marginal portion against said first surface of each of said strip members; and

means for holding such sleeve cap portion against said second surface of each of said strip member,

whereby the material of said sleeve cap portion may be gathered relative to said bodice marginal portion.

3,892,341

CLOTH TURNER

Sam M. Goodson, 1107 Fleetwood Dr., Lookout Mountain, Tenn. 37350

Filed Nov. 5, 1974, Ser. No. 521,154

Int. Cl. A41h *43/00*

U.S. Cl. 223—43 **11 Claims**

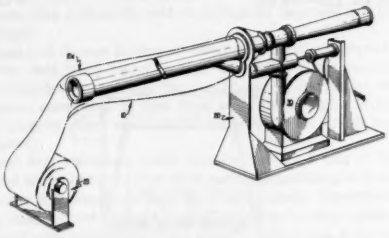
1. An everting apparatus for tubular fabric comprising:

a first elongated duct defining a first fluid passageway therewithin,

a second elongated duct disposed about said first duct and defining a second fluid passageway therebetween,

an air flow redirecting member adjacent one end of each of said first and second ducts,

a first pneumatic means for moving air through said first passageway in a direction from said one end of said first duct toward the other end thereof,



a second pneumatic means for moving air through said second passageway in a direction from said other end of said first duct toward said one end thereof, and

said member being adapted to redirect the air moving through said second passageway in a substantially longitudinal direction from the one end to the other end of said second duct along the exterior of said second duct.

3,892,342

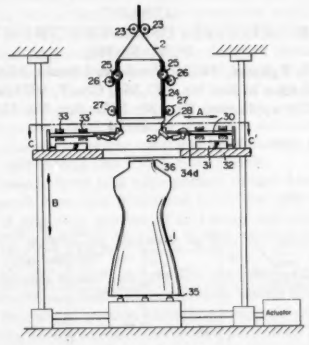
APPARATUS FOR MAKING TUBULAR KNITTED FABRICS

Kiyoshi Ogawa; Seiji Koyama, and Takehiko Michihara, all of Osaka, Japan, assignors to Teijin Ltd., Osaka, Japan

Division of Ser. No. 189,918, Oct. 18, 1971, Pat. No. 3,819,638. This application Dec. 19, 1973, Ser. No. 426,024

Int. Cl. D06c *15/00*

U.S. Cl. 223—57 **1 Claim**



1. A molding form and an apparatus for mounting a tubular knitted fabric on said molding form so as to cover its side circumferential surface, said apparatus comprising a tubular member having a conveying means which permits the passing of a tubular knitted fabric having open ends thereover; and a plurality of hold means disposed at position which permit the holding of the edges of the open ends of said tubular knitted fabric delivered from said tubular member, a reciprocable stand radially supporting said hold means and having an opening larger than the sectional area of the molding form and movable from the bottom end to top end and top end to bottom end of the molding form, and being stretchable in the direction of the diameter of the molding form.

3,892,343

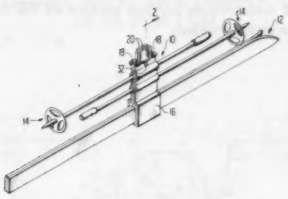
SKI-TOTE DEVICE

Walter John Warner, Westford, Vt. 05494

Filed June 15, 1972, Ser. No. 263,102

Int. Cl. B65d *45/04*

U.S. Cl. 224—45 S **11 Claims**



1. A hand-carried device for transporting a pair of skis and poles comprising:

a pair of opposed elongated clamping members each having a substantial predetermined width, each of said members being of unitary structure having wall portions defining three discrete inwardly opening recesses, mutually spaced therealong and disposed in respective lateral registry with the recesses of the opposed members, the first recesses adapted to receive a central portion of said pair of skis and the second and third recesses adapted each to receive a central portion of one of said poles so that when the central portions of said skis and poles are disposed therein the longitudinal axes thereof will extend perpendicular to the longitudinal axes of said members and the skis and poles are retained in said device solely by said pair of clamping members;

hinge means connecting said members at an end thereof for permitting pivotal movement between an open position wherein the central portions of said skis and poles may be received in the recesses, and a closed position wherein the wall portions of said members abut, retaining the skis and poles against movement out of the recesses; each of said wall portions being substantially coextensive in width with the corresponding member to prevent substantial pivotal movement of the skis and poles when retained in said device about axes other than their long axes;

locking means carried by said device for releasably holding said members in a closed position so that when said skis and poles are received in the recesses, and said members are in a closed position, said locking means will secure said skis and poles therein; and

handle means carried by at least one of said members adjacent an end thereof for carrying said device of the skis and poles carried thereby.

3,892,344

METHOD AND DEVICE FOR REGULATING THE TENSION AND LENGTH OF A SHEET OF MATERIAL

Louis Corse, 6, rue Auguste Rodin, Orleans, France (45018)

Filed Jan. 9, 1974, Ser. No. 431,979

Claims priority, application France, Jan. 11, 1973, 73.00899

Int. Cl. B65h *25/04*

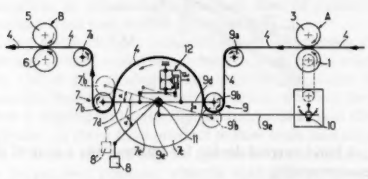
U.S. Cl. 226—44 **5 Claims**

1. Apparatus for maintaining and regulating tension in a sheet of material, travelling from an upstream area to a downstream area, to keep the length of the sheet between said areas constant, comprising;

upstream sheet engaging means for delivering a travelling sheet; downstream sheet engaging means for receiving the delivered sheet; drive means for driving at least one of said sheet engaging means;

a jockey roller unit disposed between the upstream and downstream sheet engaging means comprising a drum

rotatable about an axis transverse of the travelling sheet and having an arcuate surface portion concentric with said axis and engageable with the sheet; upstream jockey roller means engaging the sheet to guide it from the upstream sheet engaging means onto an upstream part of said arcuate surface portion; downstream jockey roller means engaging the sheet to guide it from a downstream part of said arcuate surface portion to the downstream sheet engaging means;



means for biasing one of the jockey rollers to maintain tension in the sheet engaged thereby; and

servo-control means for adjusting a position of the other jockey roller in response to a change of position of said one jockey roller and for thereby controlling said drive means to compensate corresponding variations of the length of said sheet between said upstream and downstream sheet engaging means;

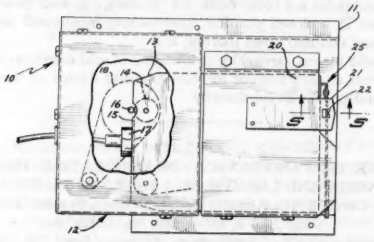
whereby said compensating is performed both promptly and accurately.

3,892,345

CARTRIDGE LATCH

Kermit W. Pietenpol, Minneapolis, Minn., assignor to Telex Communications, Inc., Minneapolis, Minn.

Filed Dec. 26, 1973, Ser. No. 428,409
Int. Cl. B65h *17/20*
U.S. Cl. 226—89 **18 Claims**



1. In tape handling apparatus of the class above described;

a tape cartridge receiving chamber having inner and outer ends;

a tape cartridge holding means including resilient lever means engaging the outer end of a cartridge in said chamber in at least two laterally spaced apart positions relative to a capstan in the inner end of said chamber; and

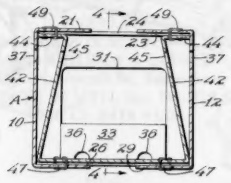
means pivotally mounting said lever means intermediate the ends thereof.

3,892,346

ASPARAGUS CONTAINER

Walter R. Hughes; John P. Vear, and Elmer G. Swanson, all of Salinas, Calif., assignors to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Feb. 16, 1973, Ser. No. 333,276
Int. Cl.² B65D ,
U.S. Cl. 229—14 BE **9 Claims**



1. A container for asparagus and the like including:

an outer container having side and end walls connected in rectangular tubular relation,

bottom closure flaps hingedly connected to the lower edges of said side and end walls and folded inwardly therefrom, top closure flaps hinged to the upper ends of side and end walls and folded inwardly therefrom,

a liner including a liner bottom panel substantially coextensive with the area between said side and end walls and resting upon said bottom closure flaps,

liner side walls hinged to opposite sides of said bottom panel and inclining upwardly and inwardly therefrom to form an asparagus compartment of substantially trapezoidal vertical section, and

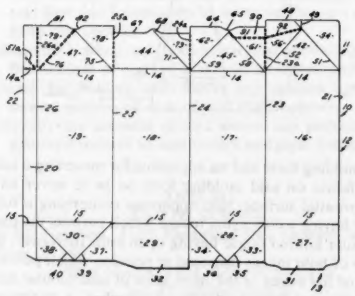
liner flaps hinged to the upper edges of said liner side walls and folded outwardly beneath said top side and end wall closure flaps.

3,892,347

FLAT END CLOSURE CONTAINER WITH RECLOSABLE POUR SPOUT

Harry B. Egleston, 14625 Flamingo, Livonia, Mich. 48154

Continuation of Ser. No. 187,364, Oct. 7, 1971, abandoned. This application Dec. 20, 1972, Ser. No. 316,798
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 R **8 Claims**



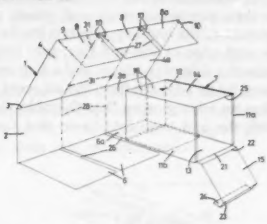
1. A container blank having body portion with an end closure, comprising, in combination:

a. said container blank defined by first and second side edges and first and second end edges;
b. a horizontal score line on said container blank separating said body portion and said end closure;
c. four vertical score lines extending substantially the length of said container blank;
d. a first, second, third and fourth body panels and a side seam flap defined by said vertical score lines and said side edges;
e. said end closure having an outer side panel connected to first said body panel, a first triangular panel member connected to said second body panel, and inner side panel connected to said third body panel and a second triangular panel member connected to said fourth body panel;
f. said first triangular panel member having a pair of first and second second fold back panels connecting it to said outer side panel and said inner side panels, respectively;
g. said second triangular panel member having a pair of third and fourth fold back panels connecting it to said inner side panel and said side seam flap;
h. said outer side panel having a edge portion as part of said first end edge extending between one side edge and one of said vertical score lines, a distance substantially the width of said first body panel and being positioned from said horizontal score line greater than one half the width of said second and fourth body panels;
i. said inner side panel having a edge portion as part of said first end edge and extending between two of said vertical score lines defining said third body panel and being positioned a distance from the horizontal score line less than one half the distance across said second and fourth body panels;
j. said first and second fold back panels having a common edge portion extending between two of said vertical score lines across the width of said second body panel and being positioned a distance from said horizontal score line greater than one half the width of said second and fourth body panels;
k. said third and fourth fold back panels having common edge portion as part of said first end edge and extending between two vertical score lines across the width of said fourth body panel, said edge portion being positioned from said horizontal score line, a distance greater than one half the width of said second and fourth body panel;
l. the distance from said edge portion of said first fold back panel from said horizontal score line and the distance from said edge portion of said inner side panel from said horizontal score line substantially equals the distance across said second and fourth body panels;
m. the distance from said edge portion of said fourth fold back panel from said horizontal score line plus the distance of said edge portion of said inner side panel substantially equals the distance across said second and fourth body panels;
n. a perforated score line crossing the common vertical score line of said first and second body panels and having a first perforated portion extending onto said outer side panel and having a second perforated portion on said first fold back panel, said perforated score line intersecting said vertical score line at a distance from said horizontal score line which will substantially equal the distance across said second body panel less the distance said edge portion of said second fold back panel is positioned from said horizontal score line, and said second perforated portion terminates at the apex of said first triangular panel member; and
o. said first perforated portion extending diagonally across said outer side panel and terminating approximately half the distance across said outer side panel and terminating a distance from said horizontal score line greater than one half the distance across said second and fourth body panels.

3,892,348
FOLDING CONTAINER

Benedikt Rohner, Zurich, Switzerland, assignor to Neher A.G., Switzerland

Filed June 28, 1973, Ser. No. 374,514
Claims priority, application Switzerland, Aug. 17, 1972, 12201/72; Germany, May 17, 1973, 2324897
Int. Cl. B65d *13/04*
U.S. Cl. 229—23 R **7 Claims**



1. A folding storage file comprising:
a plurality of individual containers, each having in its closed position two side walls, a rear wall, a bottom integral with said side walls and spaced slightly from the lower edge of said rear wall to provide a gap therebetween along the rear edge of said bottom, a top wall, and a front hinged cover being integrally connected to the front edge of said bottom and pivotable about said front edge;
a carrier in its closed position having a rear wall being connected along one longitudinal edge via a fold line to a cover wall and being provided along another longitudinal edge with a plurality of pivotable bottom tongues, said cover wall of said carrier being provided along its longitudinal edge which is remote from its rear wall with a plurality of top tongues, such that the tongues serve to connect the carrier to the individual closed containers when the same are to be enclosed therewithin, with each bottom tongue being received through said gap between the rear wall and the bottom of a respective one of said containers to overlay the bottom of said respective one of said containers and each top tongue being disposed against the inside surface of the top wall of a respective one of said containers, being folded along the longitudinal edge of said carrier cover wall remote from its rear wall about the top front edge of said respective one of said containers.

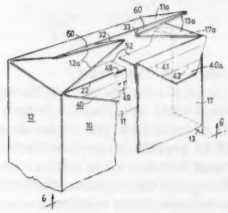
3,892,349
CARTON BOX

Karl Rune Persson, Halmstad, Sweden, assignor to Sprinter Pack AB, Halmstad, Sweden

Filed Apr. 1, 1974, Ser. No. 456,848
Claims priority, application Sweden, Apr. 13, 1973, 052953/73
Int. Cl. B65d *5/02*
U.S. Cl. 229—37 R **4 Claims**

1. A carton box having a rear panel, a front panel and a pair of opposite side panels, said panels being at one end of the box extended with corresponding end flaps foldable along transverse end edge fold lines to enable closing and sealing the end of the box, the rear panel being at one of its edges extended with a side edge flap which is secured to the inside of the adjacent side panel, the end flap of the front panel being hingedly connected with the end flaps of the side panels along side edge fold lines, said end flaps being double-folded along 45° to fold lines so that they may be folded inwardly together with the end flap of the associated front panel, characterized in that the side edge flap also is extended with a side edge end flap, shorter than the other end flaps, and which along at least part of its one side edge is hingedly connected with the corresponding portion of the side edge of the end flap of the rear flap, for forming a side edge hinge; that the rear panel end flap

is connected by means of a corresponding and equally located side edge hinge at its opposite side edge with a corresponding portion of the side edge of the adjacent side panel end flap; that a slit is provided in the rear panel end flap, defining an opening flap having side edges which extend to the end edge fold line between the rear panel and its end flap; that two intermediate fold lines parallel with lastmentioned end edge fold line are aligned with each other on opposite sides of the opening flap, and extend between the outer ends of the side edge hinges to their respective inner end points at the slit, dividing that portion of the end flap which is located between the slit and the end edge of the end flap, into two side end areas joining onto the side edge hinges and a flap end portion, which is separated by an edge slit from the adjacent side panel end flap, and has an edge glueing flap, foldable along a fold line parallel with the end edge fold lines; that the flap end

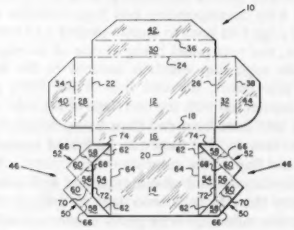


portion is folded into the box, and is secured with the edge glue flap to the inside of the rear panel in a position where its fold line substantially coincides with the end edge fold line of the opening flap; and that from each end of the fold line of the edge glue flap a 45° fold line extends to the inner end point for the respective intermediate fold line and defines a triangular side area, lying against the inner side of the adjacent side end area, the arrangement being such, that when folding down the front panel end flap together with associated side panel end flaps this will result in a portion of the end flap of the rear panel lying between the edge hinges being folded inwards to a position at right angles to the rear panel, to form a supporting flap which at its ends is double folded along said 45° fold lines and which, after folding down the opening flap over the end flap of the front panel, will serve as an abutment or support for that pressure which is exerted on the flaps of the box end when sealing the same.

3,892,350
SHIPPING CONTAINER

William G. Sieffert, Joliet, Ill., assignor to Olinkraft Inc., West Monroe, La.

Filed Sept. 20, 1972, Ser. No. 290,724
Int. Cl. B65d *5/18, 85/54*
U.S. Cl. 229—40 **7 Claims**



1. In a shipping container for a book or the like and of the type comprising a top panel, a plurality of end panels hingedly attached to the top panel, a plurality of cover panels hingedly attached to the end panels and a bottom panel hingedly attached to at least one of the end panels, the improvement comprising:

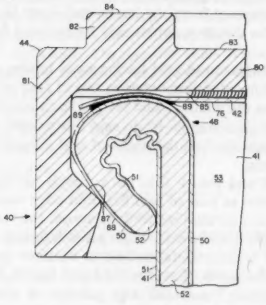
a. the bottom panel having formed on each of two opposite sides thereof a substantially vertical cushioning panel, said cushioning panels being hingedly attached to the opposite sides of the bottom panel; and

b. each cushioning panel having formed thereon at least one reinforcement panel, said reinforcement panels being hingedly folded along a fold line in the shape of a V and perpendicularly attached to the cushioning panel.

3,892,351
CONTAINER SUBASSEMBLY HAVING A MEMBRANE-TYPE CLOSURE

Charles Louis Johnson, and Charles Donald Stuard, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 12, 1974, Ser. No. 488,101
Int. Cl. B65d *5/64, 43/00*
U.S. Cl. 229—43 **12 Claims**



1. A container subassembly comprising a membrane-type closure, a composite tubular body having an outwardly rolled top rim, and heat activatable sealant and electrical insulation means disposed intermediate said closure and said rim of said body,

said closure comprising an electrically conductive sheet which is configured to provide a disc portion and an integral radially extending tab, said tab being folded so that it extends radially inwardly from the perimeter of said disc portion and is disposed superjacent the top surface of said disc portion,

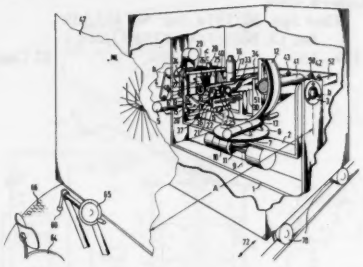
said body comprising a liner formed form a web of electrically conductive material which is spindled into a tabular shape so that oppositely disposed side edge portions are sealingly secured together in overlapped relation to form a body seam, and

said closure being sealingly secured by said heat activatable sealant to said rim along a circumferentially extending seam with said electrical insulation means disposed therebetween so that the peripheral section of said disc portion conforms radially and circumferentially to an upwardly facing annular-shape area of said rim.

3,892,352
TARGET SIMULATOR FOR A SIGHTING APPARATUS

Hans Eglin, Geneva, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Feb. 19, 1974, Ser. No. 443,819
Claims priority, application Germany, Feb. 24, 1973, 2309344
Int. Cl. F41g 3/26
U.S. Cl. 235—61.5 S **11 Claims**



1. A target simulator for a sighting device of a gun comprising;
- a light source (41) for transmitting a light beam;
- a ground-glass plate (47);
- a first movable mirror (45) arranged in the path of said light beam for portraying at said ground-glass-plage (47) by means of a first light mark (ML) the apparent movement of a target (M) which is to be attacked;
- a scond movable mirror (54) arranged in the path of said light beam for generating a second light mark (TL) which is effective for indicating an aiming error arising during adjustment of the sighting device;
- a first lever arm (40), the first mirror (45) being arranged at an end of said first lever arm (40);
- a second lever arm (30), the second mirror (54) being arranged at an end of said second lever arm (30);
- drive means (23, 31, 32, 33, 36, 37, 38) for operatively interconnecting both lever arms with one another;
- means for mounting said two lever arms (30, 40) so as to be movable about three axes (*a—a*, *b—b*, *c—c*) which are perpendicular to one another;
- means for motor driving (5, 10, 13, 16, 27) said movable lever arms (30, 40) about each such axes (*a—a*, *b—b*, *c—c*) by an amount corresponding to:
  - a. a programmable distance (*e*W) from the gun (G) to a crossing point (W) of the linear flight path (FW) of the target,
  - b. a programmable inclination angle (τ) of the flight plane (FE) within which there is located the target to be simulated,
  - c. a programmable target velocity for generating the apparent target movement; and
- manual adjustment means (65, 66) provided for the azimuth angle (δ) and the elevation angle (γ).

3,892,353
SLIDE RULE

Charles H. Schuh, 430 Appian Way N.E., St. Petersburg, Fla. 33704

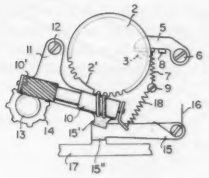
Filed Aug. 3, 1972, Ser. No. 277,793
Int. Cl. G06g 1/02
U.S. Cl. 235—64 **3 Claims**

1. In a multi-scale slide rule pen in which a post molded thermoplastic laminate covers the surface of the pen and in which the laminate is in the form of two longitudinal strips, a narrow one attached to the pen, and a wider one, the laminate slide, which slides along the pen and has a segmental tubular form, the improvement comprising the use of a continuous laminate as the surface layer of the pen, said continuous laminate having a total thickness of 17 to 24 mils and a rigidity suitable for molding to the curvature of the pen, said continuous laminate being comprised of a printed laminating core sheet selected from the group consisting of paper, metal and thermoplastic, said continuous laminate comprising further, clear, thermoplastic overlay sheets selected from the group consisting of vinyl resin, cellulose acetate, cellulose acetate butyrate and polyester said continuous laminate being free of any delamination, and free of any distortion of the scale printing on the laminate, said laminate slide, having a diameter when removed from the pen of 5 to 9 mils less than the diameter of the pen, said laminate slide being under constant springlike tension on the pen due to the diameter difference between the slide and the pen, said laminate slide having a constant sliding resistance on the pen suitable for satisfactory slide rule operation, and said laminate slide having a rigidity suitable for satisfactory slide rule manipulation.

3,892,354
FILM COUNTER ASSEMBLY

Takumi Nagao, and Manabu Sugano, both of Tokyo, Japan, assignors to Kabushiki Kaisha Yashica, Tokyo, Japan

Filed Dec. 21, 1973, Ser. No. 427,214
Claims priority, application Japan, Dec. 28, 1972, 47-2977
Int. Cl. G06m 1/32
U.S. Cl. 235—91 C **3 Claims**



1. A film counter assembly for a camera which comprises: a gradation counter disc mounted on a worm gear, said worm gear having a cutaway portion thereof;
- a worm means for rotatably engaging said worm gear; and
- a stop means for idling said worm means at said cutaway portion of said worm gear means to prevent further rotation thereof during rewinding operation of film in said camera.

3,892,355
LOCK FOR SELECTION MECHANISM FOR A POSTAGE METER

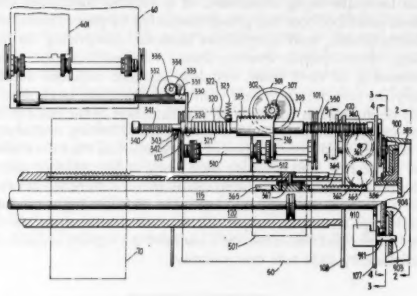
Arthur J. Malavazos, deceased, late of Hayward, Calif.; by Gregory A. Malavazos, administrator, San Leandro, Calif., and Jan Urdal, San Mateo, Calif., assignors to AJM Research Corporation, Hayward, Calif.

Filed Apr. 3, 1974, Ser. No. 457,591
Int. Cl.[2] G07G 1/00
U.S. Cl. 235—101 **9 Claims**

1. In a postage meter, the combination which comprises:
- 1. manually set and ordinally arranged value selection members for determining the value to be stamped upon mail

matter and to be registered in suitable registers; and

2. selectively operable means for locking selected ones of



said value selection members in a differentially set position.

3,892,356

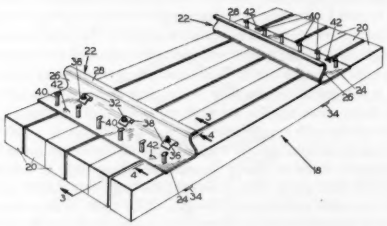
MODULAR RAILROAD GRADE CROSSING

Paul G. Harmon, Portland, Oreg., assignor to Railco, Inc., Portland, Oreg.

Filed June 12, 1974, Ser. No. 478,723

Int. Cl. E01b *2/00*

U.S. Cl. 238—8 **2 Claims**



1. A modular railroad grade crossing comprising in combination:

a. a railroad grade crossing base,

b. superimposed on the base a pair of spaced, parallel flangeway guards each comprising an integral plate angularly shaped in tranverse cross section to provide

1. a substantially horizontal outwardly directed base segment disposed flat on the upper surface of the grade crossing base,

2. a reversely bent upright rail guard segment, and

3. an inwardly directed substantially horizontal cap segment,

c. a pair of spaced, parallel railroad rails superimposed on the base plate segments of the flangeway guards in substantially parallel laterally spaced relation thereto,

d. first securing means securing one side of the base plate segments to the grade crossing base, and one side of the rails to the base plate segments,

E. the reversely bent upright rail guard segment providing a pocket between the lower ends of the rail and guard segment for reception of said first securing means while spacing the upper end of the guard segment closer to the upper end of the rail for reception of the flange of the railroad car wheel,

f. second securing means securing the other side of the base plate segments to the grade crossing base and the other side of the rails to the base plate segments, and

g. paving material supported on the grade crossing base between the upright rail guard segments and beneath the cap segments of the railway guards by which the paving material is retained and capped, respectively.

3,892,357

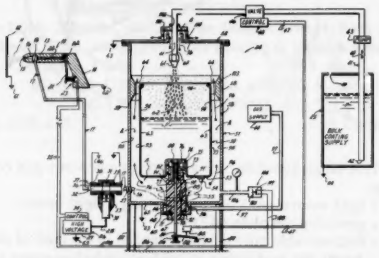
ELECTROSTATIC SPRAY APPARATUS AND METHOD

Simon Z. Tamny, Lorain, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Apr. 30, 1974, Ser. No. 465,539

Int. Cl. B05b *5/00*; **F23d** *11/28*

U.S. Cl. 239—15 **22 Claims**



1. An electrostatic coating system operable on a continuous basis for coating articles with electrically conductive material supplied from an electrically grounded bulk coating source comprising:

a material spray device for emitting electrostatically charged coating material for application to an article maintained at an electrostatic potential different from that of said emitted coating material,

an electrically grounded source of uncharged bulk coating material,

an inner container for storing coating material within the interior thereof, said inner container having an outer wall, coating material transmission means for transferring uncharged coating material from said bulk source to said inner container without establishing an electrically conductive path between said bulk source and said inner container,

an electrically grounded outer container enclosing said inner container and spaced therefrom to provide a gas flow path between the inner wall thereof and said outer wall of said inner container, said gas flow path communicating with said interior of said inner container,

a conduit interconnecting said inner container and said spray device for conveying coating material from said inner container to said spray device, said conduit being constructed of insulative material sufficient to withstand dielectric breakdown when conveying electrostatically charged coating material,

a high voltage source having an output connected for electrostatically charging said coating material emitted by said spray device,

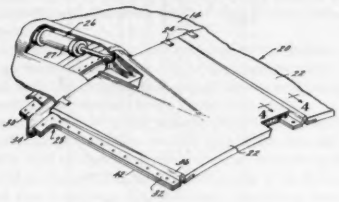
an electrically nonconductive support structure physically contacting both said inner and outer containers for supporting said inner container in electrically isolated relation relative to said outer container, and

a source of gas connected to said gas flow path for providing a gas flow in said flow path to prevent deposition of a film of coating material on said support structure sufficient to conduct a substantial level of electrical current from said inner container to said outer container.

3,892,358
NOZZLE SEAL

Jan M. Gisslen, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Mar. 17, 1971, Ser. No. 125,277
Int. Cl. B64c *15/02*
U.S. Cl. 239—265.39 **4 Claims**



1. A variable area nozzle for a gas turbine engine of the type adapted to generate propulsive thrust by producing a motive fluid stream and effluxing same from a passage of said engine, said nozzle comprising:

a plurality of flaps arranged in an annular array and hingeably connected to a supportive portion of said engine so as to define a downstream extension of and an outlet for said motive fluid passage;

means for pivoting each said flap about its hinge connection to vary the cross-sectional area of said outlet; and

seal means for preventing motive fluid leakage between peripherally adjacent ones of said flaps and at said hinge connections, said seal means comprising means forming a plurality of axial strips and an annular band having a preformed flex loop, said band secured on one side of said flex loop to said supportive engine portion and on the other side of said flex loop to said flaps, each said strip having a preformed flex loop and secured along its length to a respective pair of flaps with said flex loop disposed between said flaps, said flex loops sized to permit the desired pivotal movement of the flaps.

3,892,359
SPRAY APPARATUS OPERABLE BY PRESSURIZED AIR

John Robert Dwyer, Jr., Timonium; Alvydas Petras Karasa, Baltimore; Jonathan Durand Bell, Towson, and James Lawson Allen, Cockeysville, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Oct. 24, 1973, Ser. No. 409,188
Int. Cl. B05b *7/30*
U.S. Cl. 239—342 **8 Claims**

1. A paint spray apparatus, including:

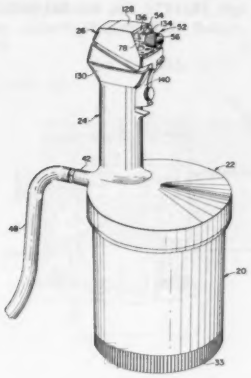
a container for holding paint and pressurized air, said container comprising a canister-like base including an open end for receiving the paint and a cover for closing said open end of said canister-like base;

said cover including an air inlet for receiving pressurized air to be supplied to said canister-like base and an integral handle extending upward from said cover to enable the paint spray apparatus to be manually gripped, said handle having a hollow interior in fluid communication with said canister-like base;

a paint spray head mounted at the top of said handle for receiving paint and pressurized air from said container and for mixing the paint and air to produce a paint spray;

first conduit means extending downwardly from said paint spray head through the interior of said handle into said canister-like base to permit paint to flow from said canister-like base to said paint spray head; and

second conduit means for connecting said paint spray head to the interior of said handle to permit pressurized air to

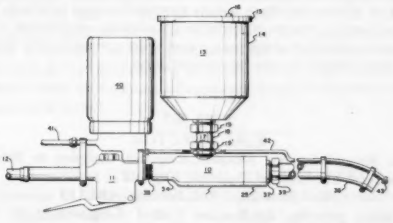


flow from said canister-like base through said handle to said paint spray head.

3,892,360
APPARATUS FOR DRY PACKING OF SURFACES

Roy Otto Schlottmann, 10810 Estate Dr., Boise, Idaho 83705, and Paul Edward Yadon, P.O. Box 425, Parma, Idaho 83360

Continuation-in-part of Ser. No. 26,992, April 9, 1970, abandoned, and a continuation of Ser. No. 194,254, Nov. 1, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 377,371
Int. Cl. B05b *7/30*
U.S. Cl. 239—345 **4 Claims**

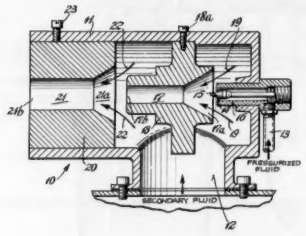


1. An apparatus for dry packing surfaces, comprising a cylindrical tube having a chamber-like portion formed by a venturi-like portion in one of its terminal ends and by a wall portion at the terminal end opposite said venturi-like portion, said venturi-like portion issuing into an orifice-like distributing portion said wall portion including an inlet disposed therein, a jet-like orifice tube selectively distally disposed in said inlet causing air under pressure from a suitable source to be blown at high velocity into said chamber portion of said cylindrical tube, a material discharge portion disposed in said cylindrical tube between said venturi-like portion and said wall portion discharging material into said cylinder portion, said chamber portion both suspending material particles therein and blowing said material particles through said venturi-like portion and said orifice-like distributing portion.

3,892,361
TWO STAGE NOZZLE

Zenon R. Mocarski, Easton, Conn., assignor to S.R.C. Laboratories, Inc., Fairfield, Conn.

Filed Apr. 18, 1974, Ser. No. 461,843
Int. Cl. B05b *7/06*
U.S. Cl. 239—432 **2 Claims**



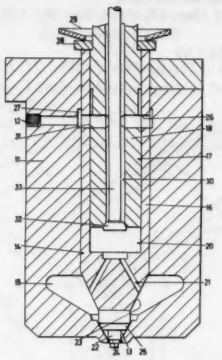
1. A two stage nozzle comprising a first stage means having a first passageway formed with an exit, means connectible to a source of pressurized fluid for directing a flow of pressurized fluid into the first passageway and means for communicating the first passageway with a source of secondary fluid whereby flow of pressurized fluid through the first passageway induces flow of secondary fluid therethrough to have both fluids be discharged from the exit; a second stage means having a second passageway formed with an exit, means for directing the flow from the first stage means into the second passageway and means for communicating the second passageway to a source of secondary fluid, said flow of fluid from the first passageway into the second passageway being the sole energizing force for inducing the flow of secondary fluid into and through the second passageway with the fluids being discharged from the second passageway exit, in which the sources of secondary fluid are the same, in which the two passageways are elongate and aligned and in which the second stage means passageway has an entrance positioned adjacent the exit of the first stage means passageway and in which the second stage means is capable of relative movement with respect to the first stage means and there are means for fixing the stage means in one relative position.

3,892,362
FUEL INJECTOR

John Roland Gayfer, Alcester, England, assignor to British Leyland UK Limited, London, England

Filed June 28, 1974, Ser. No. 484,111
Claims priority, application United Kingdom, June 30, 1973, 31262/73
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **5 Claims**

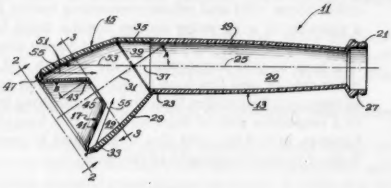
1. A fuel injector comprising:
a. a body member incorporating a fuel inlet, and a fuel outlet nozzle communicating with a bore by way of a plenum chamber;
b. a needle slidably disposed within the bore between a first position in which the outlet nozzle is closed and a second position in which the outlet nozzle is open;
c. biassing means resiliently loading the needle towards the first position;
d. a metering plunger in a plunger bore in the needle;
e. pressure sensitive means operable to isolate the plenum chamber from fuel inlet; and
f. a metering plunger displacing means operable:
i. to cause the pressure sensitive means to isolate the plenum chamber from fuel inlet;
ii. to pressurise fuel within the plenum chamber to the extent necessary to cause displacement of the needle from the first to second position against the action of the biassing means and allow output from the nozzle of a given amount of fuel from the plenum chamber.



3,892,363
ATTACHMENT FOR HYDROTHERAPY BATH

Ronald O. Hilger, Elmhurst, Ill., assignor to Associated Mills, Inc., Chicago, Ill.

Filed Aug. 5, 1974, Ser. No. 494,403
Int. Cl. B05b *1/08*
U.S. Cl. 239—590 **8 Claims**



1. An improved pulsating nozzle assembly for acqueous liquid being pumped under pressure by a liquid pump, comprising:
handle means including a first tubular side wall which has a first end and a second end and which defines a first, liquid flowpath therethrough from the first end to the second end, with the longitudinal axis of the first tubular side wall constituting a straight line and with the longitudinal axis of the first tubular side wall constituting the centerline of the first liquid flowpath;
means adjacent to the first end of the first tubular side wall for connecting said first liquid flowpath with the outlet of the liquid pump;
nozzle head means including:
a second tubular side wall which has a first end and a second end, with the longitudinal axis of the second tubular side wall constituting a straight line; and
means, including a third tubular side wall, for interconnecting the second end of the first tubular side wall with the first end of the second tubular side wall, the interconnection means defining a second liquid flowpath therethrough, with the longitudinal axis of the third tubular side wall constituting a straight line and being substantially coaxial with the longitudinal axis of the first tubular side wall, and with the longitudinal axis of the second tubular side wall intersecting, at an acute

angle, the longitudinal axes of the first and third tubular side walls;

frustro-conical cap member including a truncated, conical side wall having a first end and a second end, a circular end wall at and closing the first end of the conical side wall and an annular base extending radially outwardly from the second end of the conical side wall, with the mean diameter of the annular base being less than the diameter of the second tubular side wall, adjacent to its second end, and being greater than the diameter of the end wall of the frustro-conical cap member;

an aperature formed in the end wall of the frustro-conical cap member, with the axis of the aperature being coaxial with the longitudinal axis of the second tubular side wall and with the center of the end wall;

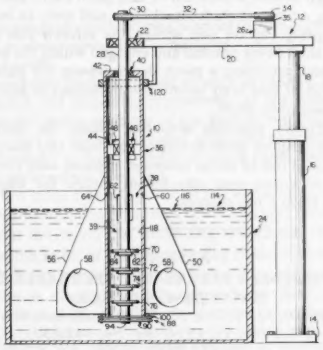
means for attaching the annular base of the frustro-conical member with the second end of the second tubular side wall so that the frustro-conical member is disposed within the second tubular side wall, with the end wall of the frustro-conical member projecting toward the first end of the second tubular side wall, so that an annular space, having a generally triangular cross-section, is defined between the annular base wall, the second tubular side wall and the conical side wall of the frustro-conical member, and so that the longitudinal axis of the first tubular side wall, as extended, is intersecting of this annular space.

3,892,364

APPARATUS AND METHOD FOR DISPERSING AND COMMINUTING THE SOLID IN A SOLID-LIQUID MIXTURE

Henry L. Lomasney, P.O. Box 29077, New Orleans, La. 70189

Filed May 9, 1974, Ser. No. 468,576
Int. Cl. B02c *17/16*
U.S. Cl. 241—15 **21 Claims**



1. A method for dispersing and comminuting the solid in a solid-liquid mixture comprising the steps of

charging a container with the mixture,

introducing the mixture from the container into a chamber located within the container, said chamber containing a large number of particulate attritive elements;

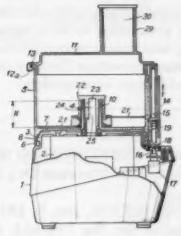
agitating the solid and the liquid in the chamber and grinding the solid in the chamber by agitating said attritive elements, and expelling the solid and liquid from the chamber back into the container.

3,892,365

APPARATUS FOR PREPARING FOOD

Pierre Verdun, 4 bis Ave. de la Belle-Gabrielle, Fontenay-Sous-Bois, France

Continuation of Ser. No. 228,513, Feb. 23, 1972, abandoned.
This application Jan. 24, 1974, Ser. No. 436,198
Claims priority, application France, July 23, 1971, 71.27039
Int. Cl. B02c *18/12*
U.S. Cl. 241—92 **13 Claims**



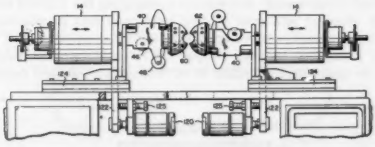
1. Apparatus for preparing foods, which comprises a working vessel mounted on top of a motor casing, said motor casing having a motor therein and an energizing circuit for said motor with an ON-OFF switch in said circuit, said working vessel having a bottom wall with a hole therein and said motor casing having a rotary motor-driven shaft adapted to extend up through said hole with a working tool having a hub portion mounted on the upper end of said shaft, said working tool being located in said vessel for working food in said vessel, complementary fastening means on said motor casing and vessel for removably fastening them together, said vessel including on its outer peripheral wall a substantially vertical channel extending throughout the height of said vessel, a push member slidably mounted in said channel and adapted when said vessel and casing are properly fastened together by said fastening means to have its lower end aligned with a control member on the ON-OFF switch in said energizing circuit, said vessel including a detachable lid provided with cam means, securing means engageable between said lid and said vessel for anchoring said lid on said vessel, said cam means being adpated to depress the upper end of said push member to cause the lower end of said push member to hold said ON-OFF switch in its ON position when said lid is properly placed on said vessel with said securing means engaged between said lid and said vessel.

3,892,366

ARMATURE WINDING MACHINE FORMS

Marinus G. Ott, Dayton, Ohio, assignor to Ott-A-Matic, Inc., Dayton, Ohio

Filed Sept. 27, 1973, Ser. No. 401,152
Int. Cl. H02k *15/09*
U.S. Cl. 242—7.05 B **7 Claims**



1. In an armature winding machine including means for holding an armature core in a winding position and means for winding coils of wire in slots extending longitudinally of an armature core held in said winding position, an improved wire guide form comprising:

a. a substantially geometrically hemispherically shaped head positioned intermediate said winding means and said winding position,
b. said head having a generally convex surface facing toward a core held in said winding position by said holding means,
c. means defining a core-receiving channel extending across said generally convex surface of said head,
d. all cross sections of said head taken through an axis extending substantially centrally through said head being, with the exception of that portion of the head occupied by said channel, substantially semi-circular, and
e. said head thereby presenting to wire being wound into a core and engaging said head a smoothly curved surface of substantially constant curvature thereby providing higher winding speed and higher wire tension.

3,892,367

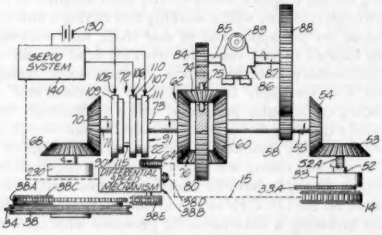
TANK WINDING AND PRESTRESSING APPARATUS

Maximiliaan J. Dykmans, 4434 Mayaxan Dr., La Mesa, Calif. 92041

Continuation of Ser. No. 105,056, Jan. 8, 1971, abandoned, which is a continuation of Ser. No. 718,464, April 3, 1968, abandoned. This application June 2, 1973, Ser. No. 375,452The portion of the term of this patent subsequent to Mar. 30, 1988, has been disclaimed.

Int. Cl. B21f *17/00*

U.S. Cl. 242—7.22 **8 Claims**



1. In a system of the character described, a carriage movable on a structure; a wire feeding mechanism on said carriage; a differential system including a first and a second axle gears, a ring gear, spider gear means journaled for rotation on said ring gear and meshing with said axle gears; means for moving said carriage on said structure; means responsive to the speed of said carriage on said structure and coupled to said first axle gear; gear reduction means coupled between said first axle gear and said ring gear to produce a speed of rotation of said second axle gear commensurate with the speed of said first axle gear; means responsive to the speed at which said wire is being laid by said wire feeding mechanism on said structure when said carriage moves on said structure and producing rotation of an element in accordance with the last-mentioned speed; and means comparing the related speed of said element and said second axle gear and producing an output when said relative speed exceeds a nominal value; and means receptive to said output and restoring said relative speed to said nominal value in accordance with said output.

3,892,368

TISSUE DISPENSER

Charles Robert Ricards, 369 Mt. Lake Road, Belvidere, N.J. 07823

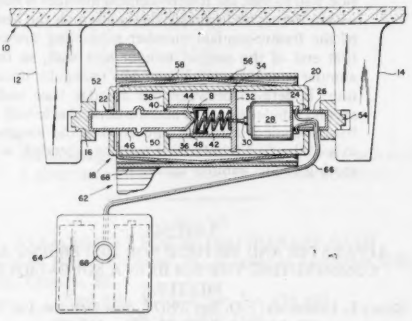
Filed Mar. 1, 1974, Ser. No. 447,427

Int. Cl.[2] A47K *10/38*

U.S. Cl. 242—55.2 **9 Claims**

1. A tissue dispenser comprising:

A. a holder body member engageable in a roll of tissue for mounting the roll;
B. stationary end attachment means rotatably mounting said body member;
C. motor drive means operatively mounted in the interior of said body member, having an output shaft operatively attached to said body member for driven rotation thereof, wherein said holder body member is hollow and having end openings therethrough, a motor mount extending through one said end opening and operatively mounting a motor interiorly of the body member, a pivot shaft mounted within the body member and having an end thereof extending through the opening at the opposite end of said body member, the exterior ends of said motor mount and said pivot shaft being operatively associatable with said stationary end attachment means, said body member being rotatable by said motor upon energization



thereof; a spring housing having a web attached to the interior of said body member and a tubular hollow extension thereon, a coil spring mounted within said tubular extension and engaged between said web and the interior end of said pivot shaft with said spring being compressible through inward movement of said pivot shaft, said motor having an output shaft attached to said web, an indented end spring cap on said spring, the interior end of said pivot shaft being pointed and engaged within the indentation and providing a pivot therebetween for permitting rotation of said body member with respect to said motor and said pivot shaft,
D. selectively operable actuating means for said drive means adapted upon actuation to rotate said body member and a roll of tissue mounted thereon with respect to said stationary end attachment means for dispensing tissue from a roll thereof.

3,892,369

TAPE DISPENSER RELEASABLY SECURABLE TO A SUPPORTING SURFACE

Eugene Fujawa, 422 Edison St., South Bend, Ind. 46619

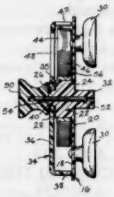
Filed Feb. 11, 1974, Ser. No. 441,039

Int. Cl.[2] B65H *19/00*

U.S. Cl. 242—55.53 **4 Claims**

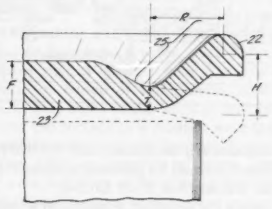
1. A dispenser in combination with a roll of tape, comprising a back plate having front and rear faces, cover means positioned over said back plate front face, spindle means positioned between said back plate and cover means, said roll of tape being coiled upon itself about an open center and being rotatatively supported upon said spindle means at its said open center for rotation relative to said cover means and back plate, suction means carried at the rear face of said back plate for releasably securing said dispsenser to a supporting surface as said tape is pulled from said dispenser, means for securing said cover plate over said back plate front face and means journaling said cover means for rotation relative to said

back plate and tape, said cover means having an opening therein to accommodate the loosened end of said tape as said tape is pulled from the dispenser with said dispenser secured



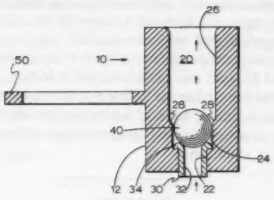
to said supporting surface by said suction means whereby said tape may rotate separately from or as a unit with said cover means.

3,892,370
FILM SPOOL
Norman E. Nelson, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 58,071, July 24, 1970, abandoned. This application Nov. 26, 1973, Ser. No. 418,912
Int. Cl. B65h *75/28, 75/14*
U.S. Cl. 242—71.8 **1 Claim**



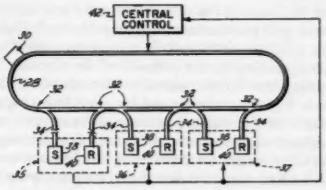
1. An integrally molded plastic spool for containing a supply roll of predetermined film comprising
1. a barrel;
2. a circular flange attached to each of the two ends of the barrel and extending transversely to the barrel, the inwardly facing surfaces of the flanges being substantially parallel to one another and separated over most of their extent by at least a distance equal to the width of said predetermined film; and
3. a low ridge extending around the whole circumference of the inwardly facing surface of each flange, radially spaced from the barrel and projecting toward the other flange; the thickness of the flanges being reduced in an area that is spaced inwardly from the outer edge of the flanges and extends circumferentially around the flanges, whereby the edge-portions of the flanges that carry the ridges are pivotable between two stable positions in which the edge-portions will remain until pressure is applied to move them to the other of the two stable positions, said stable positions comprising a) a first molded position in which the distance between the ridge on one flange and the ridge on the other flange is at least as great as the distance between the rest of the inwardly facing surfaces of the flanges and b) an operative position in which the distance between the ridges is slightly less than the width of said predetermined film, said edge-portions of the flanges having a circumference in the first and operative positions that is less than the circumference to which they are momentarily and resiliently stretched during pivoting from the first position to the operative position, whereby the edge-portions tend to remain in their operative position and the ridges hold the outer winding of film in a supply roll on the spool, but the free end of the film may be drawn between the ridges with a uniform moderate pulling force.

3,892,371
YARN TENSIONING DEVICE
Otto Zollinger, 120 Pine Acres Dr., Spartanburg, S.C. 29302
Continuation-in-part of Ser. No. 297,995, Oct. 16, 1973, Pat. No. 3,753,535. This application June 11, 1973, Ser. No. 368,735
Int. Cl. B65h *59/22*
U.S. Cl. 242—152.1 **15 Claims**



1. A tension device comprising:
a. a housing, said housing having a yarn passageway extending therethrough, said yarn passageway having a small diameter section and a large diameter section;
b. an uninterrupted annular seat located in said large diameter section of said passageway at the junction of said large and small diameter sections, said seat having an annular opening passing therethrough and presenting a smooth arcuate surface extending from said opening outwardly therefrom, the curvature of said arcuate surface being in a direction opposite the curvature of a spherical element receivable thereat; and
c. a spherical element receivable in said large diameter section of said passageway, said spherical element having a diameter less than the length of said large diameter section of said passageway and said large diameter section of said passageway at said seat and said spherical element being comparatively sized such that said spherical element may reside at said seat out of contact with walls of said large diameter section of said passageway when no yarn is passing through said opening and such that substantial lateral movement of said spherical element is precluded whereby said spherical element continuously controls tension on a yarn passing thereby.

3,892,372
PNEUMATIC CARRIER SYSTEM WITH STATION CONTROL
Werner Hauber, Nutley, N.J., assignor to The Mosler Safe Company, Hamilton, Ohio
Filed Aug. 30, 1973, Ser. No. 393,122
Int. Cl. B65g *51/36*
U.S. Cl. 243—5 **22 Claims**



1. In a station-controlled pneumatic carrier system having

at least two spaced-apart stations a control system comprising, in combination:

a destination selector at each station, physically independent of a carrier, for selecting the destination for a carrier inserted into the pneumatic carrier system at the station;

a central controller associated with at least said two stations for controlling the pneumatic carrier system;

signal means at each station for signalling said central controller when a carrier is ready to be sent from the station; and

said central controller including an interrogation circuit for determining the destination station to which a carrier is to be sent pursuant to selection thereof by its associated destination selector, said interrogation circuit being operative to transmit to said associated station selector an interrogate signal and monitor the response thereto to thereby determine the identity of said destination station selected by said associated station selector,

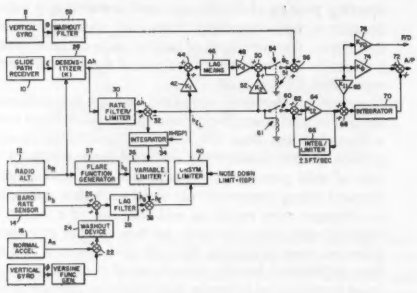
said central controller including a selector circuit for selectively connecting to said interrogation circuit only one station at a time in response to a signal from said signal means at a station.

3,892,373

INTEGRATED GLIDE PATH/FLARE AUTOMATIC FLIGHT CONTROL SYSTEM

Jerry Doniger, Montvale, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 7, 1973, Ser. No. 422,948
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 A **9 Claims**



1. A system for controlling an aircraft when landing the craft, comprising:

means for providing an aircraft rate of descent signal;

means for providing a glide path beam rate signal;

means for limiting the glide path beam rate signal in accordance with predetermined flare mode flight parameters; means connected to the aircraft rate of descent signal means and to the glide path beam rate signal limiting means for combining the signals therefrom and for providing a rate of descent error signal;

means for limiting the rate of descent error signal in accordance with predetermined glide-path mode flight parameters, said means including, means for providing a signal corresponding to the altitude of the aircraft, means for shaping the altitude signal in accordance with the flare mode flight parameters and for providing a shaped signal, means for providing a glide path beam rate signal, and feedback means connected to the beam rate signal means including means for combining the beam rate signal and the limited rate of descent error signal, means for integrating the combined signal, means for limiting the integrated signal and the limiting means connected to the shaping means, with the limit of the limiting means being varied in response to the shaped signal;

means for providing a glide path beam displacement signal; means connected to the rate of descent error signal limiting means and to the beam displacement signal means, and responsive to the signals therefrom for providing a pitch rate command signal;

means for providing a signal corresponding to the pitch attitude of the craft; and

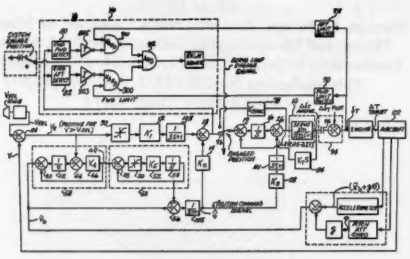
means connected to the pitch rate command signal means and to the pitch attitude signal means and responsive to the signals therefrom for controlling the aircraft.

3,892,374

TURBULENCE COMPENSATED THROTTLE CONTROL SYSTEM

Antonius A. Lambregts, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 342,917, March 19, 1973, Pat. No. 3,840,200. This application Nov. 16, 1973, Ser. No. 416,540
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D **15 Claims**



6. In combination in an autothrottle control system utilizing a signal control channel for processing signal representative of longitudinal acceleration of an aircraft:

circuit means for detecting a sustained windshear and providing a windshear correction signal which for a sustained windshear is representative of a difference between a signal representative of the inertial longitudinal acceleration and a signal representative of rate of change of air speed error; and

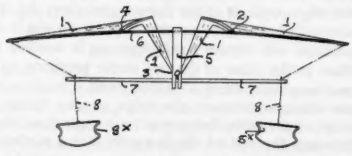
means for subtracting said windshear correction signal from the signal representative of longitudinal acceleration to provide signals in said signal control channel compensated for windshear.

3,892,375

CONTROLLED FLYING KITE

Donald Dunford, 554 Bandbury Rd., Oxford, England

Filed Aug. 6, 1973, Ser. No. 386,034
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 R **3 Claims**



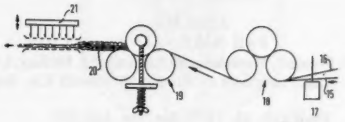
1. A kite comprising a sail, means holding the sail in extended condition and consisting of a plurality of bars extending longitudinally of the sail in its position of use, and at least one transverse bar engaging the side margins of the sail, a transverse control bar to the ends of which two kite lines may be attached, and means projecting and holding said control bar substantially spaced from the kite sail, in combination with

a control strut forming the means for projecting the control bar, said strut holding and spacing said control bar relatively to the sail and holding and spacing the transverse bar from the control bar, at least one of the bars extending longitudinally of the sail being carried by said strut and held therby longitudinally spaced forwardly of said transverse bar said sail having a substantial opening in its center area, said longitudinal bar carried by the strut crossing said opening and forming V-shaped channels of the sail meeting said opening therein.

3,892,376
METAL WIRE FELT

Glyn Beresford Redmond, Birmingham; Ernest John Harold Hill, Wolverhampton, and Maurice James Evans, Sutton Coldfield, all of England, assignors to Dunlop Limited, England

Filed June 18, 1974, Ser. No. 480,388
Claims priority, application United Kingdom, June 26, 1973, 30254/73
Int. Cl. B21f *27/02*
U.S. Cl. 245—6 **38 Claims**

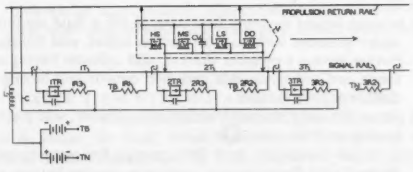


1. A method of making a felt comprises crimping continuous metal wires or bunches of wires, each individual wire having a torsional rigidity greater than 2×10^{-7} Nm^2, by passing each wire or bunch of wires under tension over a curved surface, at least some of the wires or bunches of wires being passed over the surface in a manner such that the predominating resultant helix is in the opposite direction to that of the remaining wires or bunches of wires, continuously assembling the crimped wires or bunches of wires in substantially aligned relationship under tension, continuously relaxing the assembly of wires so formed to allow interpenetration thereof to form a mat.

3,892,377
TRAIN DETECTION AND CONTROL SYSTEM

Homer L. Hathaway, Export, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Oct. 9, 1973, Ser. No. 404,751
Int. Cl. B61l *21/06*
U.S. Cl. 246—62 **9 Claims**



1. A vehicle detection system, for a transportation system in which the vehicles move on a fixed right-of-way, comprising in combination,

a. a communication channel including a pair of conductors extending along said right-of-way and including,

1. a signal conductor divided into insulated sections of predetermined length to establish channel sections corresponding to selected sections of said right-of-way, and

2. another conductor being continuous and connected to a common bus,

b. a signal source coupled between each signal conductor section and said common bus for transmitting through each channel section a signal having a predetermined characteristic,

c. control apparatus on each vehicle coupled across said conductors for receiving the signal transmitted in each channel section, and

d. a wayside detection means for each section operable between first and second conditions and connected between the corresponding signal conductor section and said common bus for normally receiving the signal transmitted through that section and responsive thereto for operating to said first condition to indicate the nonoccupied condition of the corresponding right-of-way section,

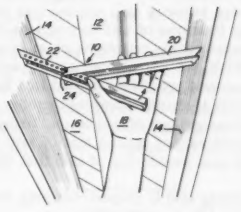
e. said control apparatus on each vehicle further effective to shunt the signal transmitted through a signal conductor section away from the associated detection means into said common bus when that vehicle occupies the corresponding right-of-way section,

1. the associated detection means responsive to said signal shunt for operating to its second condition to indicate the occupancy of that right-of-way section by that vehicle.

3,892,378
HANGER

Byron D. Lane, 212 16th Ave., Southwest, Minot, N. Dak. 58701

Filed Feb. 21, 1973, Ser. No. 334,206
Int. Cl. E04g *25/06*
U.S. Cl. 248—71 **8 Claims**



1. A hanger for supporting articles between spaced supports, comprising, in combination:

a. first and second members arranged for engaging one another and forming a support, the members each including a longitudinal web having a pair of spaced edges, longitudinal side walls extending codirectionally from the web edges to edge portions parallel to the web edges, the edge portions of the side walls of the members turned inwardly toward one another and in reverse direction to the extent of the associated side wall substantially throughout the length of the edge portions for forming substantially U-shaped channels providing rounded, strengthened edges, one of the members being arranged for receiving in the channels thereof the edge portions of side walls of the other member and snap the members into rigid locked engagement; and

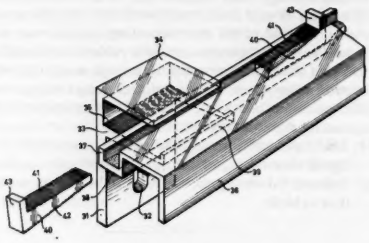
b. means for pivotally attaching the members to one another and permitting the members to pivot with respect to one another and snap into an engaging and supporting position wedged between spaced supports, with the pivot arranged relative to the members for always causing a substantial portion of the members to overlap in the engaging and supporting position.

3,892,379

FIXATION FOR A PLATE SHEATHING

Jan Hoes, Maastricht, Netherlands, assignor to Globe-Lak, N.V., Geverik, Netherlands

Filed May 9, 1972, Ser. No. 251,812
Claims priority, application Netherlands, May 11, 1971, 7106479
Int. Cl. F16m *13/00*
U.S. Cl. 248—225 4 Claims



1. Apparatus for fixing plate sheathing to a wall, comprising:
a first fixing member having a first leg and a second leg extending from said first leg substantially at a right angle thereto, said second leg having serrations on at least one surface thereof;
a second fixing member having a first leg disposed substantially parallel to said first leg of said first fixing member and a pair of second legs spaced from each other and extending outwardly from said first leg substantially at a right angle thereto, said second leg of said first member being located between said second legs of said second member, at least one of said second legs of said second fixing member having serrations on at least one surface thereof which are complementary to and engage the serrations on said second leg of said first fixing member;
a substantially U-shaped clamping member engaging said pair of said second legs of said second fixing member and clamping said pair of second legs of said second fixing member to said second leg of said first fixing member; and
means for locking said U-shaped clamping member to said pair of second legs.

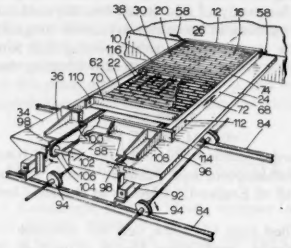
3,892,380

MEANS AND METHOD FOR PREFABRICATING AND CONVEYING CERAMIC PANELS

Yngve R. Anderson, Streetsville, Canada, assignor to Canadian Structural Clay Association, Willowdale, Canada

Division of Ser. No. 109,760, Jan. 26, 1971, abandoned. This application Dec. 22, 1972, Ser. No. 317,598
Int. Cl. B22d *19/00*, *33/00*
U.S. Cl. 249—83 3 Claims

1. Apparatus for facilitating the prefabrication of ceramic panels comprising a travelling prefabricating table and means in association with said table for transferring said panels from said travelling table to an adjacent panel-receiving station for rotation thereat into the vertical, a brick panel assembly frame, brick-spacing means movable between substantially coplanar horizontal panel-supporting surface-areas upon said table and said receiving station means in association with said frame for spacing apart bricks being assembled therein by the desired width of mortar-joints between said bricks, said brick-spacing means comprising essentially a flexible sheet on which said bricks are assembled between mortar-joint defining and brick positioning means upon an exposed surface of said sheet, and which includes in combination means for conveying finished self-supporting panels to a storage and curing area in vertical position in the plane thereof, and means for stripping



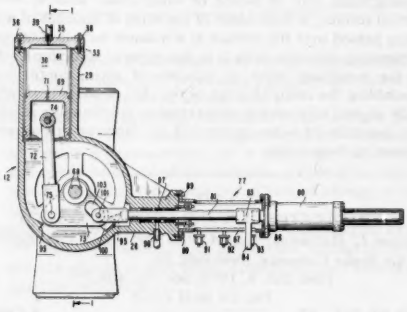
said brick spacing means from adherence to said panels while said panels are in conveying motion.

3,892,381

FAIL-SAFE VALVE

Norman F. Prescott, Wenham, and Alexander J. McKay, Lynn, both of Mass., assignors to Atwood & Morrill Co., Salem, Mass.

Filed Oct. 23, 1973, Ser. No. 408,333
Int. Cl. F16k *31/383*
U.S. Cl. 251—26 9 Claims

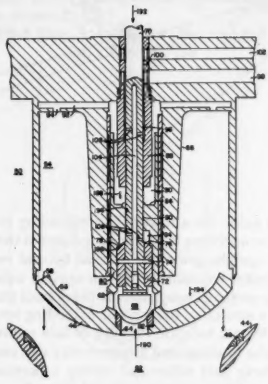


1. A valve including:
a housing means having a flow passage for a fluid medium under pressure with an inlet and an outlet, said housing further having a cylinder therein, said cylinder having an inside end and an outside end, said outside end having a discharge port therein;
a piston slideably mounted within said cylinder, said piston having an orifice through it;
stop means located in said flow passage for opening and closing said flow passage, said stop means having an opening through it, said stop means and said housing means having a conduit means connecting said opening in said stop means with the inside end of said cylinder;
actuating means mounted in said housing means and connected to said stop means and piston for actuating said stop means when the piston is moved toward the outside end of said cylinder;
means for opening and closing said discharge port whereby the pressure of the fluid medium moves the piston when the pressure in the outside end of the cylinder is released through the discharge port.

3,892,382
HOLDING ARRANGEMENT FOR A MAIN VALVE PLUG AND A PILOT VALVE PLUG

Thomas L. Dresner, Prospect Park, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed June 22, 1973, Ser. No. 372,720
Int. Cl. F16k *15/02*
U.S. Cl. 251—28 9 Claims



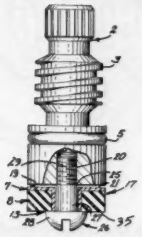
1. A valve comprising:
a body member having an inlet port and an outlet port therein;
a flexible main plug movable from an open to a seated position within said body member;
a pilot plug movably disposed within said main plug; and,
pressure responsive means for holding said main plug to said pilot plug, said pressure responsive means for holding said main plug to said pilot plug comprises:
a first chamber disposed between said pilot plug and said main plug;
a high pressure region disposed within said body member, said main plug being surrounded by said high pressure region;
a low pressure region disposed within said body member;
first communication means connecting said first chamber to said lower pressure region, said first communication means providing a low pressure within said first chamber, the high pressure in said high pressure region and the low pressure within said first chamber producing a pressure differential, said pressure differential exerting a force on said main plug to hold said main plug to said pilot plug.

3,892,383
VALVE STEM WITH ROTATABLE HEAD FOR COMPRESSION FAUCET

Paul R. Hesse, St. Paul, Minn., assignor to Union Brass & Metal Manufacturing Co., St. Paul, Minn.

Continuation-in-part of Ser. No. 402,766, Oct. 2, 1973, abandoned, which is a continuation of Ser. No. 240,257, March 30, 1972, abandoned. This application July 15, 1974, Ser. No. 488,788
Int. Cl.[2] F16K *25/00*
U.S. Cl. 251—88 2 Claims

2. In a valve of the type having a valve stem mounted in a screw for moving against a valve seat in a common axis, to throttle flow at the valve seat, a valve head comprising the following mechanical elements:
a flat circular face on the end of the valve stem, machined normal to the valve stem axis;
a cylindrical axle centrally fixed in the flat circular face and extending on the axis from the flat circular face;
a washer situated on the flat circular face, the axle extending completely through the washer, the washer having a plastic face toward the flat circular face of the valve stem and a rubber face toward the valve seat, wherein the plastic and the rubber are selected to provide that the coefficient of friction of the flat circular face against the plastic face is less than the coefficient of friction of the rubber face against the valve seat, the washer being assembled from
a plastic flanged bushing having a flat circular flange at one end of the bushing, the flange being equal in diameter to the flat circular face of the valve stem, and



a rubber ring of external diameter substantially equal to the external diameter of the flat circular flange and of internal diameter slightly smaller than the external diameter of the bushing, the rubber ring having plane parallel faces, wherein the washer is assembled by insertion of the free end of the plastic bushing into the central aperture of the rubber ring, the rubber ring clutching the plastic bushing by elastic contraction;
a keeper, fixed to the free end of the axle, to retain the washer on the axle,
wherein the diameter of the axle is smaller than the internal diameter of the washer and the length of the axle is greater than the height of the washer, thereby providing for unimpeded rotatability of the washer on the axle and also affording a space between the keeper, the axle and the valve stem on the one hand and the washer on the other hand.

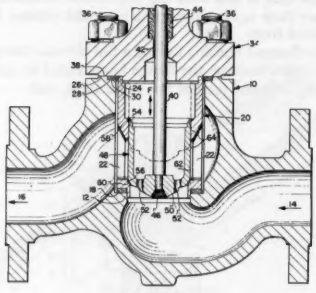
3,892,384
DOUBLE SEATED CAGE VALVE WITH FLEXIBLE PLUG SEAT

Edward B. Myers, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 12, 1974, Ser. No. 460,456
Int. Cl. F16k *1/44*
U.S. Cl. 251—282 3 Claims

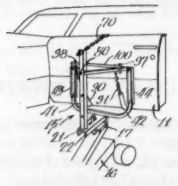
1. A double seated cage valve for controlling the flow of fluids, said valve comprising
a unitary cage member and a complementary hollow plug member formed of one piece construction,
said cage member having an upper and a lower rigid seat, said plug member having a first seat means arranged for sealing engagement with said upper seat of said cage member and a second seat means arranged for sealing engagement with said lower seat of said cage member,
said second seat means of said plug member being of rigid construction,
said first seat means of said plug member being of a resiliently deformable frusto-conical construction and being of a thinner construction than the rest of the plug,
said first and second seat means of said plug member being so spaced that as said plug is moved in a closing direction with respect to said cage member, said first seat means of said plug member engages said upper seat of said cage

member before said second seat means of said plug member engages said lower seat of said cage member, whereby further movement of said plug member in said closing



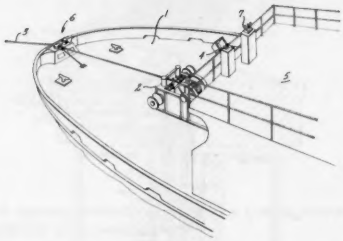
direction deforms said frusto-conical first seat means into intimate engagement with the associated upper seat and moves said second seat means into sealing engagement with said lower seat.

3,892,385
AUTOMOTIVE TOOL
Willard L. Andrist, and Richard T. Anderson, both of Owatonna, Minn., assignors to Owatonna Tool Company, Owatonna, Minn.
Filed May 17, 1974, Ser. No. 470,987
Int. Cl. B66f 7/10
U.S. Cl. 254—133 R **2 Claims**



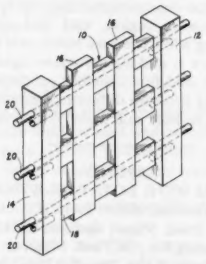
1. An automotive tool for holding automobile bumpers, doors and the like for removal from the automobile comprising, a frame having a base supportable on the lift plate of a service floor jack, an upwardly open generally U-shape first frame section extending upwardly from the base and having a pair of spaced vertically-extending legs, a cushioning abutment fixed to the front of each leg, a column extending up from the base and located rearwardly of said first frame section, a pair of members connected between the upper ends of said legs and said column and defining an acute angle therebetween, a first adjustable connector fastened to said column, said first connector being extendable to the top of a door or a bumper, a pair of pins extending upwardly one from each of said pair of members at a distance behind said first frame section, and second and third adjustable connectors held in position by said pins and extendable downwardly at an angle to the bottom of a bumper or a door.

3,892,386
MARINE TOWING LINE GUIDE
Elmer R. Hogan, Bellevue, Wash., assignor to Smith-Berger Manufacturing Corporation, Seattle, Wash.
Filed Nov. 5, 1973, Ser. No. 412,745
Int. Cl. B66d 1/36
U.S. Cl. 254—190 R **20 Claims**



18. A line guide for a towing line extending over the stern of a towboat comprising a mounting located at the stern of the towboat, an upright guidepost carried by said mounting and including a roller rotatable about an upright axis forming an upright guide surface engageable by movement transversely of its length of a stretch of towing line extending lengthwise of a towboat aft from a location forward of said mounting toward the stern of the towboat and a nonrotative cap carried by said guidepost above said roller and having a portion projecting laterally beyond the periphery of said roller forming laterally unobstructed shoulder means constituting abutment means engageable by the line during its upward movement alongside said guidepost for deterring upward movement of the line beyond said abutment means without preventing such upward movement of the line past said abutment means by application of an excessive upward force on the line transversely of its length.

3,892,387
FENCE STRUCTURE
William C. Mann, P.O. Box 263, Broken Arrow, Okla. 74012
Filed Dec. 29, 1972, Ser. No. 319,216
Int. Cl. E04h 17/14
U.S. Cl. 256—24 **1 Claim**



1. A fence structure comprising a plurality of substantially identical fence sections secured in end to end relation, each fence section comprising a plurality of picket members interposed between a pair of spaced post members, each picket member being provided with a plurality of transversely extending bores, each post member being provided with a first plurality of transversely extending bores, a plurality of connecting rod means extending through the transversely extending bores in the picket members and through the first plurality of bores in said post members and beyond said post members

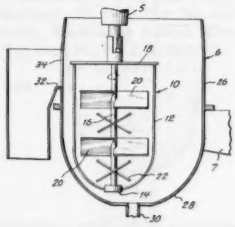
for engagement with the post members of the adjacent fence sections, each post member being provided with a second plurality of transversely extending bores offset from said first plurality of bores of said fence section for receiving the ends of connecting rod means from an adjacent fence section.

3,892,388

AGITATING WHIPPER AND METHOD

James J. Wass, Carmel, and Joseph G. Meehan, Hopewell Junction, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 5, 1973, Ser. No. 337,808
Int. Cl. B01f *7/30*
U.S. Cl. 259—5 **16 Claims**



1. An agitator whipper comprising a bowl and a tine whipper assembly mounted for planetary movement in said bowl, said assembly comprising a plurality of tines mounted upon a common shaft and baffle means also mounted on said shaft within the perimeter defined by said tines, said baffle means being of sufficient radial width to intercept, obstruct and deflect liquid ascent within said assembly, said baffle means comprising a plurality of baffles each of whose planes are poised at an acute angle with respect to the shaft, and means for admitting a whippable composition intermediate the bowl wall and said assembly at a location beneath said assembly whereby said baffle means restrict axial flow within said assembly.

3,892,389

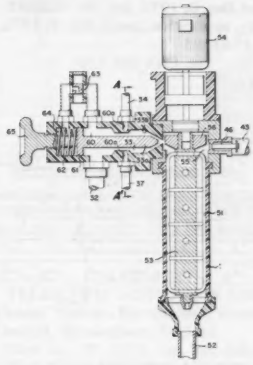
DEVICE AND METHOD FOR INJECTING LIQUIDS INTO A MIXING HEAD

Andre Contastin, Severac Gare, France, assignor to N. V. Bekaert S.A., Zwevegem, Belgium

Filed Nov. 29, 1972, Ser. No. 310,562
Int. Cl. F16k *19/00*
U.S. Cl. 259—8 **7 Claims**

1. An apparatus for introducing and mixing liquids of various viscosities comprising:

a. a mixing head having a mixing chamber,
b. mixing means in said mixing chamber,
c. a first inlet means for said mixing chamber for injecting a high viscosity first liquid into said mixing chamber on demand including first controlled inlet valve means,
d. a second inlet means for said mixing chamber for injecting an atomized low viscosity second liquid into said mixing chamber on demand,
e. said second inlet means including an atomizing chamber immediately adjacent said mixing chamber and connected directly thereto by an inlet orifice in the wall of said mixing chamber,
f. second controlled inlet valve means in said atomizing chamber for closing said inlet orifice,
g. a plurality of inlet orifices radially disposed in the wall of said atomizing chamber selectively controllable for injecting said second liquid into said atomizing chamber on demand including a controlled valve member for each of said inlet orifices,



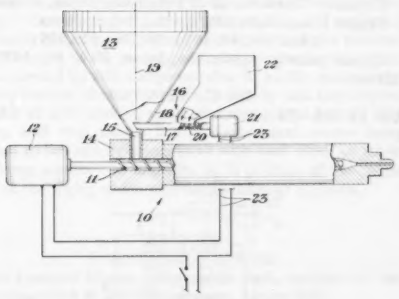
h. gas inlet means in the wall of said atomizing chamber for injecting compressed gas into said atomizing chamber for atomizing said second liquid in said atomizing chamber.

3,892,390

METHOD AND MEANS FOR PUTTING ADDITIVE IN PLASTIC AND OTHER MATERIALS

Thomas J. Eauclaire, 4181 Richmark Ln., Bay City, Mich. 48706

Division of Ser. No. 353,819, April 23, 1973. This application Aug. 15, 1974, Ser. No. 497,565
Int. Cl. B29b *1/06*
U.S. Cl. 259—192 **3 Claims**

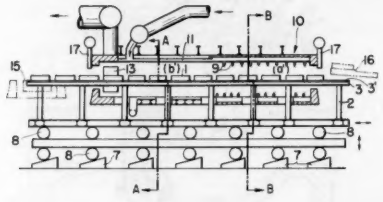


1. The method of homogenously mixing an additive with a granular material during the screw extrusion thereof which comprises: by means of an auger feed tube having a hooded terminus metering the additive material horizontally into the feed hopper of the screw extruder above and adjacent the screw and delivering the additive from the hooded terminus of the tube at a point within about one-twelfth of the diameter distance from the vertical axis of the hopper, said diameter being of the hopper section at the auger feed tube level; and controlling the auger and the screw with a common switch whereby the operations thereof are coordinated.

3,892,391
COOLING APPARATUS FOR STEEL INGOTS OR BLOOMS USING HIGH-SPEED JET STREAMS

Ryuzo Okuno, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Dec. 6, 1972, Ser. No. 312,457
Claims priority, application Japan, Dec. 6, 1971, 46-98908; Feb. 29, 1972, 47-21383
Int. Cl. C21d 1/00
U.S. Cl. 266—2 A 14 Claims

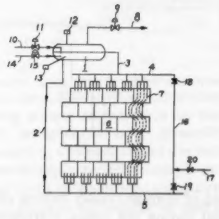


1. A cooling apparatus comprising in line, a radiation cooling chamber; a high-speed jet chamber in which substances to be treated, such as steel ingots or blooms, are subjected to contact with high-speed jet streams of a cold fluid gushing out from a large number of nozzles located therein, thereby carrying out a heat transfer between the substances and the cold fluid to cool the former, the substances being conveyed in the apparatus during the course of the cooling; a cooling tank in which the substances carried out from the said high-speed jet chamber are rapidly cooled nearly to normal temperature by increasing the flowing speed of water or a cold liquid in the tank; and a carriage which operates to convey the said substances from the said high-speed jet chamber into the said cooling tank.

3,892,392
EVAPORATIVE COOLING APPARATUS FOR COOLING STAVE

Takeo Yamada; Kazuo Kunioka; Shunichi Sugiyama, and Toyokazu Teramoto, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1974, Ser. No. 523,825
Claims priority, application Japan, Nov. 19, 1973, 48-129146
Int. Cl.[2] C21B 7/10
U.S. Cl. 266—32 7 Claims



1. In an evaporative cooling apparatus for a cooling stave including a steam separator (1), a downcomer (2) coupled to said steam separator (1), a cooling stave (6) coupled to said downcomer and a riser (3) coupling said cooling stave (6) to said steam separator (1), the improvement comprising:

heating means (14, 15) for maintaining the temperature of water in said steam separator (1) at substantially the boiling point thereof,

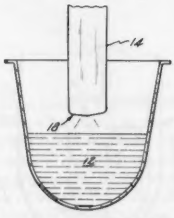
circulation activating pipe means (16) in fluid communication with said cooling stave (6) for imparting a circulating force to cooling water in said cooling stave (6), and

steam feeding means (17) connected to feed steam to said circulation activating pipe means (16).

3,892,393
LANCE TIP

John T. Carroll, New Boston, and Nathan G. Harris, Wyandotte, both of Mich., assignors to John T. Carroll, New Boston, Mich.

Filed Feb. 7, 1973, Ser. No. 330,289
Int. Cl. C21c 7/00
U.S. Cl. 266—34 L 2 Claims



1. In an oxygen lance of the type comprising an oxygen delivery tube having fluid circulation means circumferencially disposed therearound, a lance tip therefor, comprising in combination:

Central means for deflecting the oxygen issuing from said lance, said means for deflecting the oxygen being affixed to said oxygen delivery tube, said means for deflecting the oxygen having a plurality of means for absorbing heat therefrom disposed about the periphery thereof and being formed therewith;

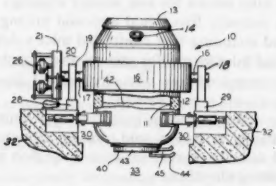
at least one rib for absorbing the heat generated about the end of said lance, said rib being disposed within and extending from the outer wall of said fluid circulation means to said oxygen delivery tube; and

said means for deflecting the oxygen comprises a conical member and the area proximate the apex of the conical member is formed from steel and the area proximate the base of the conical member is formed from copper.

3,892,394
METALLURGICAL VESSEL HAVING RESTRAINING MEANS

Richard P. Krause, and Harry T. Montgomery, both of New Castle, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Aug. 6, 1973, Ser. No. 385,993
Int. Cl. C21c 5/46
U.S. Cl. 266—36 P 23 Claims



1. A metallurgical vessel,
support means for said vessel,

pivot means coupled to said vessel for pivoting the same about a generally horizontal axis,

means for delivering at least one process gas to said vessel, and

a plurality of restraint means including a first portion mounted on said vessel and a second portion relatively movable into and out of engagement with said first portion for stabilizing the vessel against rocking motion when said portions are in engagement and allowing said vessel to pivot when said portions are out of engagement, said second restraint portion including at least one arm means pivotally mounted adjacent said vessel for pivotal movement into and out of engagement with said first portion of said restraint means.

3,892,395

STOPPER RODS

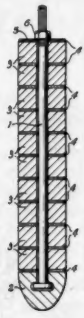
Ian James Hazlehurst, Guelph, Canada, assignor to Foseco International Limited, Birmingham, England

Filed Sept. 26, 1973, Ser. No. 400,737

Claims priority, application United Kingdom, Sept. 29, 1972, 44887/72; May 30, 1972, 25862/72

Int. Cl. F27d *3/15*

U.S. Cl. 266—38 **4 Claims**



1. A stopper rod formed of a central metal bar threaded at one end and carrying at its other end a head of refractory material, a plurality of sleeves of refractory material, and a plurality of preformed rings of a fibre-containing refractory material filling the interstices between the head and the adjacent sleeve and between each of the sleeves, the assembly of head, sleeves and rings being held axially compressed by a nut engaged on the threaded end of the bar with a compression spring interposed between the nut and the adjacent sleeve, a heat-reflective shield surrounding said spring, the space between said shield and said plate being filled with a heat insulating material selected from the group consisting of particulate refractory material, fibrous refractory material and mixtures thereof.

3,892,396

LINING FOR HIGH TEMPERATURE FURNACES

George J. Monaghan, Lewiston, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,649

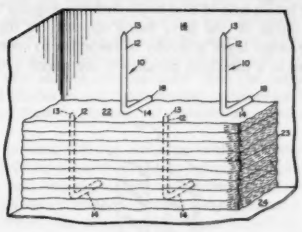
Int. Cl. F27d *1/16*

U.S. Cl. 266—43 **8 Claims**

1. A lining for the interior surface of a furnace, comprising:

a. at least one metallic hanger for attachment to the interior surface of the furnace, said hanger having a first portion attached to said surface and a second portion projecting within said furnace and disposed in substantially parallel relationship to said surface; and

b. at least one insulation panel comprised of flexible fibrous refractory material, said panel being impaled over and completely penetrated by said second portion of said hanger, one longitudinal edge of said panel being held by



said hanger in firm longitudinal contact with the interior surface of said furnace to form the lining.

3,892,397

TELESCOPIC SUSPENSION UNITS

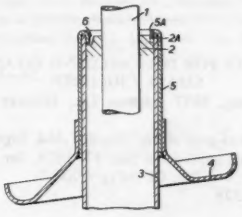
Lawrence George Nicholls, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Dec. 27, 1973, Ser. No. 428,853

Claims priority, application United Kingdom, Jan. 4, 1973, 644/73

Int. Cl. B60q *13/00*

U.S. Cl. 267—8 R **5 Claims**



1. A monotube suspension unit comprising a tube and an external flange member surrounding said tube for supporting one end of an external coil compression spring, and means for detachably mounting said flange member to said tube intermediate the ends of the working space thereof comprising stop means carried by said flange member in axially spaced relationship thereto, abutment means carried by said tube beyond one end of said working space and engageable by said stop means, said stop means and said abutment means being adapted to be held in engagement with each other to retain said flange member on said tube in its position of use by the force of the spring which said flange member supports.

3,892,398

COMPRESSION SPRING

Gerald Leonard Marsh, Indianapolis, Ind., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

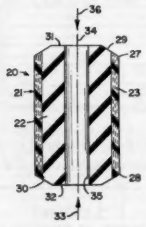
Division of Ser. No. 262,819, June 14, 1972, abandoned. This application Feb. 1, 1974, Ser. No. 438,804

Int. Cl.[2] F16F *1/36*

U.S. Cl. 267—153 **5 Claims**

1. A compression spring comprising a hollow body of elastomeric material having a height to width ratio of approximately two to one in unstressed condition, said body having a substantially cylindrical configuration throughout the major portion of its height, and having at at least one end a shaped portion of diminishing cross-section and having an outer surface inclined at an angle to the major axis of said body, reinforcing means extending axially of said body at least coextensive in height with the height of said cylindrical configuration

and comprising at least two layers of elastomer coated cords integrally bonded layer to layer and to said body, the cords of each layer being parallel to one another and extending at an angle to the major axis of said body with the angular relationship of the cords of one layer being opposite to that of the cords in the other layer whereby in response to compressive force exerted in a direction parallel to the major axis of said



body, the elastomeric material of said shaped portion takes up the initial compressive force as the height of said body is decreased and said reinforcing means having such a bonded relationship with said body as to resist radial expansion to such an extent that the major portion of said body retains its substantially cylindrical configuration up to loads of at least 70,000 pounds.

3,892,399

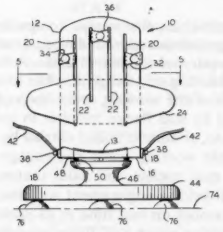
APPARATUS FOR IMMOBILIZING INFANTS AND SMALL CHILDREN

Edwin Cabansag, 3937 Johnson Ln., Western Springs, Ill. 60558

Continuation-in-part of Ser. No. 401,364, Sept. 27, 1973, abandoned. This application Jan. 17, 1974, Ser. No. 434,351

Int. Cl. A61g *15/00*

U.S. Cl. 269—328 **17 Claims**



1. An apparatus for use in taking X-ray exposures of a subject including:

a substantially vertical radiotransparent member;

a substantially horizontal platform rigidly affixed to the lower end of said vertical member to form a seat adapted to support said subject;

a base adapted to be fixed to a support means against relative movement therewith;

bearing means disposed between said platform and said base for rotatably mounting said platform and said seat on said base about a vertical axis;

radiotransparent restraining means slidably and operatively connected to said vertical member and variably positionable in a vertical direction;

said restraining means adapted to extend around a portion or portions of the subject's body to secure said portion or portions of said body in said seat against movement;

a second substantially vertical radiotransparent member disposed normal to said first vertical member and to said platform;

first and second X-ray film support means mounted rearward of said first and second vertical members respectively relative to said seat;

elongated slot means disposed in said second vertical member;

said slot means adapted to receive said radiotransparent restraining members for vertical movement therein; and said restraining means when in said second vertical member adapted to extend around and secure the upper portions of said subject's body to said second vertical member when said subject is supported by said seat in a position 90° from the position in which said subject is supported by said first vertical member.

3,892,400

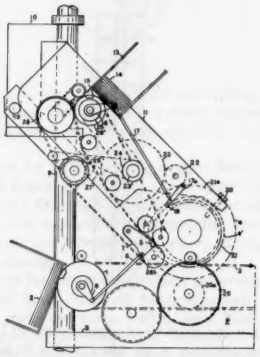
PAPER FEEDER MEANS FOR PRINTING PRESS

Henry Harrison, Locust Valley, N.Y., assignor to Halm Instrument Co., Inc., Glen Head, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,793

Int. Cl. B65h *3/44*

U.S. Cl. 271—9 **2 Claims**



1. In a printing press having a first roller type paper feeder for first size papers, and first drive means to drive said first paper feeder:

a second roller type paper feeder for second size papers,

a vertical post mounted on said press,

first mounting means pivotally mounted on said post for horizontal rotation,

second mounting means pivotally mounted on said first mounting means for vertical rotation,

said second paper feeder being mounted on said second mounting means,

wherein said second mounting means has second drive means to drive said second paper feeder so that when second mounting means is rotated into operative position, said second drive means engages said first drive means.

3,892,401

JUMPING PIT

Bill W. Sorenson, Jefferson, Iowa, assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,753

Int. Cl. A63b *69/00*; **A47c** *27/00*

U.S. Cl. 272—59 R **1 Claim**

1. A jumping pit, comprising,

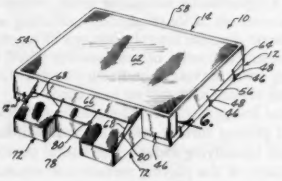
a plurality of resilient modules arranged in a side-by-side relationship,

each of said modules comprising a resilient body member and a module cover enclosing the same, each of said body members comprising a lower rectangular foam section and an upper rectangular foam section positioned thereon, said lower section having a plurality of vertically disposed openings formed therein and extending completely therethrough,

said upper rectangular foam section being positioned immediately adjacent said lower rectangular foam section,

and a cover means at least partially enclosing said plurality of modules and being secured thereto to prevent the separation of said modules with respect to each other,

a resilient auxiliary module secured to said plurality of modules and extends from one side thereof, said auxiliary module having a length less than the distance between the



bar supports of a pole vault apparatus, said auxiliary module having a recessed area at its center length to permit said auxiliary module to partially extend around the vaulting box, said auxiliary module having a tapered upper end portion which extends downwardly and outwardly from the plurality of modules; and a flap member extending from said cover means partially over said upper end portion of said auxiliary module, said flap member being normally secured to said auxiliary module, said flap member also being able to be positioned in a vertically disposed condition adjacent said one side of said plurality of modules when the auxiliary module is not secured to said plurality of modules when the pit is being used for high jump events,

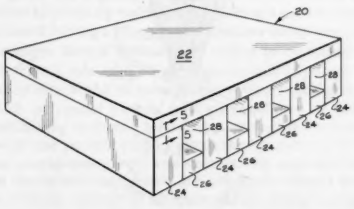
and a plurality of resilient members detachably securing said flap member to said auxiliary module when the said auxiliary module is positioned at said one side of said plurality of modules.

3,892,402

LANDING PAD

James L. Montour, 5520 Percheron St., Richmond, Va., and Wilfred N. Montour, 610 Dartmoor St., Ann Arbor, Mich. 48103

Filed Sept. 7, 1973, Ser. No. 395,237
Int. Cl. A63b *5/18*
U.S. Cl. 272—59 C **9 Claims**



1. A landing pad for athletic events comprising a flexible cover defining when fully distended a moisture impervious enclosure having top, bottom and side walls, and a plurality of separate blocks of resilient foamed material positioned within said enclosure to fully distend the cover, said blocks including a top block dimensioned so that it extends under the full surface of the top wall, a plurality of support blocks positioned in parallel spaced apart relation on said bottom wall and upon which said top block is supported, and a plurality of spacer blocks positioned on said bottom wall between said support blocks for maintaining said spaced apart relation, each spacer block extending between a pair of adjacent parallel support blocks and having less elevation than the adjacent parallel support blocks so that said plurality of separate blocks define between them a plurality of parallel air spaces within said cover.

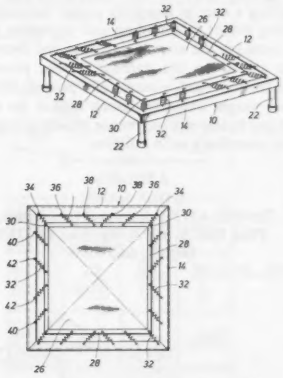
8. A landing pad for athletic events comprising a flexible cover defining when fully distended an enclosure having top, bottom and side walls, and a plurality of separate blocks of resilient foamed material positioned within said enclosure to fully distend the cover, said blocks including a top block dimensioned so that it extends under the full surface of the top wall, a plurality of support blocks in spaced apart relation upon which said top block is supported, and a plurality of spacer blocks between said support blocks for maintaining said spaced apart relation, said blocks defining between them air spaces within said cover, each of said blocks being enclosed in a thin wrapping material having a relatively low coefficient of friction to facilitate recoil of the blocks so that after a load has been imposed they can readily recover their original positions, said thin wrapping material being polyethylene sheet material.

3,892,403

EXERCISE APPARATUS

Victor J. Green, 8121 Barkley Dr., Houston, Tex. 77017

Continuation of Ser. No. 9,643, Feb. 9, 1970, abandoned. This application Nov. 23, 1971, Ser. No. 201,325
Int. Cl. A63b *5/08*
U.S. Cl. 272—65 **6 Claims**



1. Exercising apparatus comprising:

a rectangular frame, said frame formed of opposite side frame portions and opposite end frame portions,

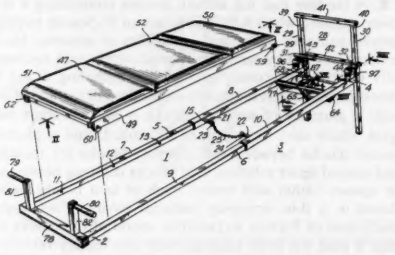
a rectangular bed formed of flexible fabric disposed in said frame having side margins and end margins spaced inwardly from the side frame and end frame portions, respectively,

means for supporting said frame in a substantially horizontal plane, and

coil springs connected at their inner ends to be margins of said bed and connected at their outer ends to said frame, all said springs being connected so that the springs to the right of the center of said side and end frame are connected to said frame at a point to the right of an imagnary line perpendicular to said frame through the point where the spring is connected to said bed and the springs to the left of center of said side and end frame are connected to said frame at a point to the left of an imaginary line

perpendicular to said frame through a point where the spring is connected to said bed.

3,892,404
EXERCISE DEVICE
Theodore Martucci, 44 Grace Ln., Levittown, N.Y. 11756
Filed Oct. 30, 1974, Ser. No. 519,112
Int. Cl. A63b *23/00*
U.S. Cl. 272—79 R **6 Claims**



1. An exercise device, comprising

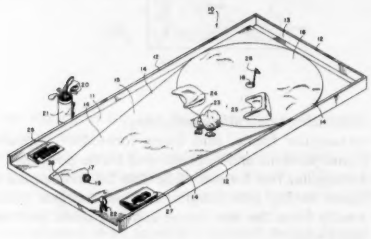
adjustable variable length track means having one end supportable on a supporting surface and an opposite other end;

adjustable variable track elevating means foldably affixed to the other end of the track means supporting said other end of said track means at a selected distance above the supporting surface thereby supporting the track means in angular relation with the supporting surface;

carriage means movably mounted on the track means for supporting a user in generally seated position; and

foot resting means mounted on and extending between the track means in the area of the other end thereof whereby a user seated on the carriage means presses his feet against the foot resting means and propels himself against his own weight along the track means via the carriage means and by use of every major muscle group in his body thereby exercising such muscles.

3,892,405
GOLF GAME
Manuel C. Trevino, 4173 Beechwood La., Dallas, Tex. 75220
Filed Feb. 5, 1973, Ser. No. 329,713
Int. Cl. A63 *7/06*
U.S. Cl. 273—87.2 **3 Claims**



1. A golf game, comprising in combination:

a. a hitting board having oppositely disposed ends and a shaped playing surface located thereon longitudinally extending between said ends,

b. said playing surface having a portion adjacent one of said ends defining a driver line and a recessed hole longitudinally spaced from said driver line toward said other end defining a cup; said playing surface additionally having indicia means marked thereon dividing said playing surface into a first set of longitudinally extending areas and a first set of laterally extending areas transversely intersecting said first set of longitudinally extending areas, respective ones of said first set of longitudinally extending areas serving to indicate discrete at rest lateral positions of an object being driven across said playing surface, respective ones of said first set of laterally extending areas serving to indicate discrete at rest distance positions from said driver line of an object being driven across said playing surface,

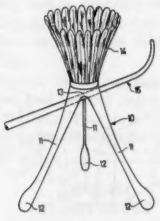
c. a plurality of cards, each card having a graphic illustration representing the layout of a different hole of a golf course, said graphic illustration including a portion defining a tee and an area longitudinally spaced from said tee defining a cup; each card additionally having indicia means thereon dividing said card into a second set of longitudinally extending areas aand a second set of laterally extending areas transversely intersecting said second set of longitudinally extending areas, respective ones of said second set of longitudinally extending areas serving to indicate discrete lateral positions of an object on said card, respective ones of said second set of laterally extending areas serving to indicate discrete distances from said tee toward said cup on said card,

d. said first and second sets of longitudinally extending areas of said playing surface and said card both having lateral position identifying indicia, the lateral position identifying indicia of the playing surface corresponding to, and being the same as, the lateral position identifying indicia of the card; said first and second sets of laterally extending areas of said playing surface and said card both having distance indicating indicia respectively indicating distances from said driver line and from said tee, the distance indicating indicia of said card indicating distances in excess of that of the distance indicating indicia of said playing surface, whereby each of said cards can be used to continuously plot the movement of a point on said card by distance and lateral position, corresponding to the movement of an object successively driven from said driver line across said playing surface toward said recessed hole,

e. at least one miniature golf club; and

f. object means simulating a miniature golf ball adapted to be driven by said miniature golf club across said playing surface.

3,892,406
PROJECTOR AND PROJECTING MEMBER
Jurgen Georg Baier, Elisabethstr. 3/IV, 8 Munich 40, Germany
Filed Mar. 21, 1974, Ser. No. 453,291
Claims priority, application Germany, Mar. 28, 1973, 2315548
Int. Cl. A63b *71/00*
U.S. Cl. 273—96 B **36 Claims**



1. A sport and games apparatus comprising a throwing and catching-rod having a handle at one of its ends, and a flying member therefor having a longitudinal axis, said flying member including a heavier end and a lighter end disposed at

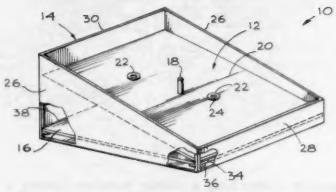
opposite extremities of said axis, means on said lighter end stabilizing the flight of said member, said heavier end including a plurality of arms which extend out from said lighter end generally in the direction of the longitudinal axis, the said arms opening from said lighter end towards said heavier end of said flying member so that said flying member can ride on said throwing rod with the point of attachment of each of said arms on said lighter end of said flying member in stable equilibrium.

3,892,407

MAGNETIC RING TOSS APPARATUS

Edward Higgins, 155 W. White St., Summit Hill, Pa. 18250

Filed Aug. 5, 1974, Ser. No. 494,848
Int. Cl.² A63B *71/02*
U.S. Cl. 273—100 **3 Claims**



1. An improved game of skill, said game comprising, in combination, an inclined game board, means supporting said game board in said inclined position, a peg secured to and rising above the upper surface of said game board, a magnet disposed below said game board in a predetermined position relative thereto, and a plurality of apertured throwing plates, the apertures thereof being sufficiently large to receive said peg, said apertured plates comprising magnetically attractable material, wherein said means supporting said game board includes a frame and wherein said magnet is secured in said frame, wherein said magnet comprises a generally flat plate extending under at least a portion of said board, wherein said peg is spaced inwardly from the front, rear and sides of said board and wherein said magnet extends only from adjacent one end of said board to adjacent said peg.

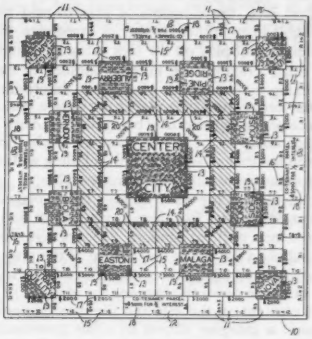
3,892,408

EDUCATIONAL GAME

Charles E. Small, 1314 W. San Bruno, Fresno, Calif. 93704; Lawrence E. Small, 3314 Sawtelle, Apt. No. 13, Los Angeles, Calif. 90066; Charles R. Small, 1314 W. San Bruno, Fresno, Calif. 93704, and Harlan F. Ellis, 14730 Ave. 313, Visalia, Calif. 93277

Filed Nov. 12, 1973, Ser. No. 414,929
Int. Cl.² A63F *3/00*
U.S. Cl. 273—135 AB **6 Claims**

4. A game for a plurality of players which simulates the acquisition of property rights in establishing a path comprising a game board having a playing area continuous between opposite side edges thereof simulating a region to be traversed by the path from a side edge to an opposite side edge and being partitioned into a plat of contiguous, intermingled groups of interfitted, polygonal parcels, said parcels being of different sizes and having common boundaries so that the boundaries of some of the parcels extend along the boundaries of more than one contiguous parcel and successively adjacent boundaries on the invididual parcels are angularly related to form corners with the corners of adjacent parcels being contiguous and extended one into the other to provide common angularly related boundaries, the parcels forming a multiplicity of potential paths from each parcel to a plurality of contiguous parcels with such potential paths extending between opposite side edges of the playing area; sets of markers individual to the players adapted individually to occupy the parcels to designate acquisition of rights therein and the markers of each set being visually distinct from the markers of the other sets; and



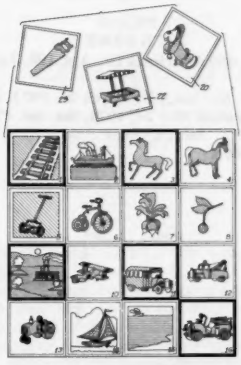
chance means to award the players opportunities to place their respective markers individually on selected parcels.

3,892,409

GAME BASED ON CATEGORIES OF SUBJECT MATTER OF PLAYING TILES

Charles H. Herbert, Jr., 890 E. Marshall Blvd., San Bernardino, Calif. 93404

Continuation-in-part of Ser. No. 338,214, March 5, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,227
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 AC **3 Claims**



1. A game comprising the combination of:

a single playing board for use by a plurality of players, said board being marked into a plurality of equal size squares defining parallel rows of squares extending normal to each other, said board having no other indicia for playing the game imprinted thereon;

a set of tiles each having an external dimension complementary with a single square of said board and adapted to be placed as a single and complete entity on one of said squares, the number of said tiles being at least equal to the number of squares, each of said tiles having a first and second face, said first face of each tile having a multi-colored element of play thereon, each element of play including a plurality of parts, each part being defined by lines completely enclosing a two dimensional area, each

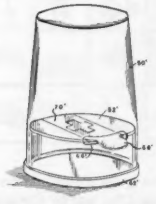
part including indicia enclosed within said two dimensional area, no part of the element of play of one tile being duplicative of any part of the element of play of any other tile, each element of play being complete in and of itself and requiring no other element of play to complete said first face, the elements of play of said tiles being classifiable in an infinte number of categories, the collective elements of play on the tiles being non-duplicates of each other creating the infinite number of categories, each category chosen for play being determined at the optional declaration of a player drawing a tile, said second face of each of said tiles being devoid of any identifying relationship to the subject element of play on the first face, the number of said set of tiles falling within a given player determined category being variable;

said set of tiles at the start of play being played from a position where said first face is face down and the first player selects a tile at random, exposes said elements of play and plays the tile in any square of the playing board he chooses, and each succeeding player in turn selects at random a face down tile exposes the element of play and if that element on the selected tile may be construed to represent a category shown by a tile previously played and declared and there is an open square horizontally or vertically contiguous to the last mentioned tile or tiles the player may place his tile in one of said contiguous horizontal or vertical squares, provided the play made progresses or completes a row of tiles in said sanie declared category, or in the alternative if the element of play on the tile selected by the succeeding player or players is representative of a new category which may be related to the element of play on a previously played tile it may at the option of the player be declared and played adjacent to the tile in the category previously established on the board so long as the positioning of the tile on the board adjacent to a previously established category establishes a different horizontal or vertical direction from said previously established category.

3,892,410
DICE GAME

John H. Hoetzel, 650 Americana Dr., Apt. 108, Annapolis, Md. 21403

Division of Ser. No. 344,877, March 26, 1973, abandoned. This application May 24, 1974, Ser. No. 473,213
Int. Cl.² A63F 9/04
U.S. Cl. 273—145 C **3 Claims**

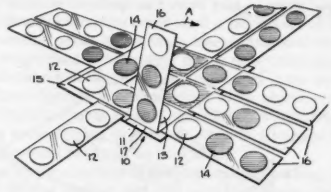


1. A dice agitator comprising a transparent closed hollow container having a base supporting said container in an upright position; a plate-like platform parallel to said base extending between the inner side walls of said container dividing said container into an upper and lower chamber, said platform having an opening therethrough interconnecting said chambers; a reciprocal sliding closure extending through an opening in the side of said container, said closure being in sliding engagement with said platform to form a substantially planar top surface with said platform to close said platform opening when in one reciprocated position and establishing communication through said platform opening between said chambers in a second reciprocated position thereof; and a plurality of dice in said container, each being of a smaller dimension than said platform opening, whereby the dice in the upper compartment may be shaken and read with the reciprocated closure being utilized to provide the desired number of dice in said upper compartment.

3,892,411
GAME BOARD PUZZLE WITH OVERLAPPING TRANSPARENT STRIP MEMBERS

Carl E. High, 110 Sullivan St., New York, N.Y. 10012

Continuation-in-part of Ser. No. 380,467, July 18, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 505,979
Int. Cl.² A63F 9/08
U.S. Cl. 273—155 **6 Claims**

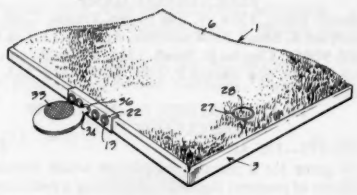


1. A puzzle comprising a planar member having a playing surface thereon, a plurality of strip members pivotally mounted at their respective ends in an array around said playing surface, said strip members each comprised of transparent material and carrying a plurality of indicia disposed at spaced positions thereon generally along the longitudinal axis of the strip, said strip members being deployable in overlapped relationship with one another against said playing surface to provide a preselected arrangement of the indicia on adjacent strip members and an overall relative pattern and sequence.

3,892,412
PUTTING PRACTICE GREEN

Bonny B. Koo, 1016 Austin Ave., Pacific Grove, Calif. 93950

Filed Sept. 3, 1974, Ser. No. 502,387
Int. Cl.² A63B 69/36, 57/00
U.S. Cl. 273—176 H **2 Claims**



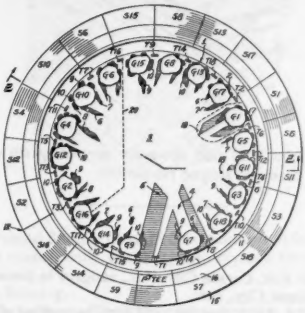
1. In a putting practice green,
a, baseboard,
a resiliently flexible element forming a simulated putting surface, on the board,
and selectively manipulatable means for producing selected undulations of said putting surface,
a putting hole in the putting surface,
and releasable means to plug said hole at will so as to complement the putting surface,
said selectively manipulatable means including
a plurality of inflatable bags,
a conduit extended from each bag,
valve means for each of said conduits located at an edge of the board in a position accessible from the outside of said board,

and manipulatable inflating means connectable selectively to the respective valve means.

3,892,413
GOLF COURSE PLAYING METHOD

Frank J. Rotolo, 1515 E. Broadway, Tucson, Ariz. 85719

Division of Ser. No. 59,992, July 31, 1970, Pat. No. 3,719,361. This application Mar. 2, 1973, Ser. No. 337,743
Int. Cl. A63b *69/36, 67/02*
U.S. Cl. 273—176 AB **3 Claims**



1. A method of playing golf on a course having a perimeter, putting greens in spaced apart relation to each other along the perimeter, tee areas adjacent selected ones of said spaced apart greens, each of said tee areas having an associated green across the course, and a way along said perimeter for movement of players from a tee area to a green area without crossing the course, comprising the steps of:

playing a first hole by

hitting a golf ball across the course, using a lofted golf club, toward an associated first green, from a first tee area to a ball landing area adjacent the first green,

using the way to travel along the perimeter of the course to a location adjacent the associated first green,

entering the course within said perimeter from a location adjacent said associated first green and walking to a position adjacent the ball previously hit to the ball landing area, and

playing the ball toward the first green from its lie in said ball landing area and completing play for the hole on the green;

playing a second hole by

moving to a second tee area on the same side of the course as the first green just played,

hitting the ball using a lofted golf club, from said second tee area toward an associated second green on the other side of the course,

using the way to travel to a location adjacent the second green, and

completing play for the second hole in the manner followed to complete play for the first hole; and

repeating the sequence of steps for play of the first and second holes to play the remaining holes of the golf course.

3,892,414
GOLF BALL DIRECTION INDICATOR

William J. Glasson, 355 S. Granados Ave., Solana Beach, and Robert L. Janssen, 900 S. Six Ave., Hacienda Heights, both of Calif. 92075

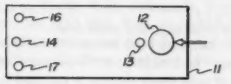
Filed Mar. 20, 1974, Ser. No. 453,012
Int. Cl. A63b *69/36*
U.S. Cl. 273—185 R **5 Claims**

1. A golf ball direction indicator comprising:

a plurality of photosensitive elements spatially disposed in proximity with a golf tee;

a direction indicator lamp corresponding to each of said photosensitive elements;

a plurality of switching means, said plurality of switching means coupled between each of said photosensitive elements and said indicator lamps and operable for energizing the associated indicator lamp when a golf ball passes over one of said plurality of photosensitive elements indicating a general direction of trajectory of a golf ball; and

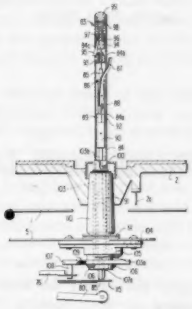


said switching means includes lock-out means interconnected for locking out any remaining indicator lamps when one has been energized.

3,892,415
RECORD CHANGER

Yoshio Takahashi; Kunio Abe, and Haruhiko Tanaka, all of Fukuroi, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 25, 1973, Ser. No. 409,516
Claims priority, application Japan, Oct. 25, 1972, 47-107001
Int. Cl. G11b *17/04, 17/12*
U.S. Cl. 274—10 S **6 Claims**



1. A record changer including a tone arm and a turntable and comprising:

a. a hollow record spindle for receiving a stack of records;

b. upper claw means mounted within said spindle and having a closed position which permits records to slide over said upper claw means, and having an open position wherein said upper claw means extend through a window in said spindle for supporting records above said claw means;

c. lower claw means mounted within said spindle below said upper claw means and having a closed position which permits a record to slide thereover and fall upon the turntable, and having an open position for initially supporting records on said spindle said lower claw means being normally kept in the open position;

d. spindle shaft means mounted within said spindle for axial and rotational movement;

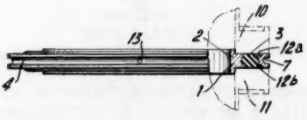
e. upper claw operating means mounted within said spindle for opening and closing said upper claw means in response to up and down movement of said shaft;

f. lower claw operating means mounted within said spindle for opening and closing said lower claw means in response to rotational movement of said shaft;

g. rotatable cam means for controlling the movement of the tone arm and having a first and a second cam surface;
h. first cam follower means controlled by said first cam surface for imparting up and down axial movement to said shaft for opening and closing said upper claw means;
i. second cam follower means controlled by said second cam surface for imparting reversible rotational movement to said shaft for opening and closing said lower claw means;
j. means for rotating said cam; and
k. means for keeping said second cam follower means from engagement with said second cam surface to prevent the rotation of said shaft during a manual operation;

whereby with said lower claw means kept in the open position, axial movement of said shaft in one axial direction closes said upper claw means so that records on said spindle are initially supported by said lower claw means; and whereby axial movement of said shaft in the opposite axial direction opens said upper claw means so that all but the lowermost record are supported thereby, and rotation of said shaft in one angular direction closes said lower claw means so that the lowermost record falls upon the turntable.

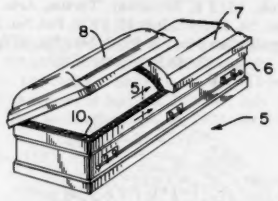
3,892,416
SEALING MEMBER FOR FLANGED JOINTS
Jochen Ruhe, and August Beck, both of Triesen, Liechtenstein, assignors to Balzers Patent-und Beteiligungs Aktiengesellschaft, Liechtenstein
Filed Dec. 3, 1973, Ser. No. 420,895
Claims priority, application Switzerland, Aug. 22, 1973, 012103/73
Int. Cl. F16j *15/10*
U.S. Cl. 277—29 **2 Claims**



1. A sealing member for sealing the area between flange connections comprising an inner backing ring, a seal ring disposed around the periphery of said backing ring, an outer ring disposed around the periphery of said seal ring, said outer ring having a rabbet in the form of a groove adjacent the seal ring, said outer ring having an opening establishing communication of the groove with the outside, said outer ring being provided with a groove on each side face, the opening establishing communication with the exterior of said outer ring comprising a separate passage for each groove.

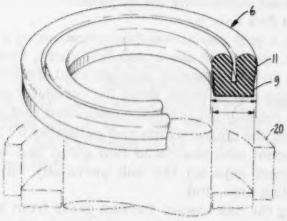
3,892,417
GASKET FOR SEALING A CASKET
Marvin Courtland Clayton, Springfield, Mo., assignor to American Funeral Supply Corporation, Springfield, Mo.
Filed Aug. 27, 1973, Ser. No. 391,936
Int. Cl. F16j *15/00*
U.S. Cl. 277—207 R **4 Claims**

1. A gasket for a burial casket comprising, a flexible resilient solid rubber-like body in strip form having upper and lower sealing surfaces and inner and outer edges, a downwardly projecting rib on the lower sealing surface at the inner edge of the body, an upwardly projecting rib on the upper sealing surface at the outer edge of the body, a diamond shaped rib pattern on the upper sealing surface generally centrally positioned between the inner and outer edges of the body and in the form of a single chain of diamonds joined



point to point, and said upwardly projecting rib extending above the diamond shaped rib pattern.

3,892,418
SEAL RING
Maurice D. Felt, Carson City, Nev., assignor to Sacomo Sierra Inc., Carson City,, Nev.
Filed Apr. 4, 1973, Ser. No. 347,836The portion of the term of this patent subsequent to Apr. 4, 1989, has been disclaimed.
Int. Cl.² F16J *15/24*
U.S. Cl. 277—205 **1 Claim**



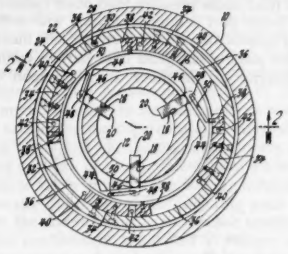
1. In a sealing ring having a cross sectional configuration consisting of a generally rectangular base having a flat bottom portion and two shoulders of equal height extending generally upward from said flat base, said shoulders forming the arms of a U, said shoulders having a space between them extending upwardly from a root, the outward surface of the said shoulders tapering outwardly from the level of the root and the upper surfaces of said shoulders being symmetrically rounded 180°, the improvement comprising a ring designed for nominal dimension, said ring having an uncompressed cross sectional width substantially greater than said nominal dimension and said shoulders having an open space between them wherein the space between the shoulders is substantially less than the difference between said nominal dimension and the actual distance between the extremities of said shoulders in an unstretched condition whereby said U will close and flatten the abutting surfaces of said shoulders when said ring is installed in a space substantially equal to said nominal dimension, said ring having an unstressed cross sectional width of about 110 percent nominal, said root having a width of about 12½ percent nominal and the distance between the shoulders being about 6¼ percent nominal at their closest approach.

3,892,419

BALANCED FLOATING MACHINE TOOL CHUCK

Richard C. Jackson, Bloomfield Hills, and Eberhard E. Wasserbaech, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 19, 1974, Ser. No. 480,936
Int. Cl. B23b *31/16, 31/30*
U.S. Cl. 279—4 3 Claims



1. A balanced floating chuck for a machine tool for concentrically or eccentrically clamping a workpiece therein comprising

a chuck housing,

floating chuck means mounted in movable relationship within the housing for allowing radial movement of the mechanism to eccentric locations relative to the center of said housing,

a chamber surrounding the chuck means defined by the housing and the chuck means, and

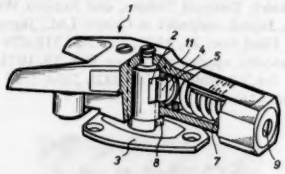
a liquid filling the chamber, the density of the liquid being substantially equal to the average density of the chuck means so that the chuck means remains balanced when the chuck means is eccentrically located within the chuck housing.

3,892,420

SUPPORT DEVICE FOR SKI SAFETY BINDINGS

Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH., Germany

Filed Aug. 15, 1973, Ser. No. 388,463
Claims priority, application Germany, Aug. 16, 1972, 2240159
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T 20 Claims



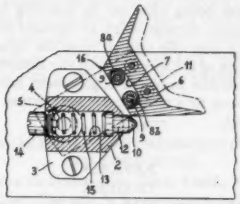
1. A support mechanism for safety ski bindings with a disengageable support jaw means, a bearing pin means for fixedly holding the support jaw means at a ski, said bearing pin means being provided with a detent groove into which engages a detent member constructed as roller means under the pressure of detent spring means, characterized in that a guide member for absorbing laterally directed forces is disposed in the support jaw means and fixed with respect thereto, the guide member is arranged between the bearing pin means and the spring means, said guide member approximately surrounding the roller means which is slidable in the longitudinal direction of the support mechanism, and in that a spring plate means for absorbing the longitudinally directed forces is provided and disposed in the support jaw means between the roller means and the detent spring means, the spring plate means is angularly movably supported against the roller means.

3,892,421

SAFETY TOW-END DEVICE FOR SKI BINDING

Rene Ramillon, 3, rue Emile Zola, Grenoble, France

Division of Ser. No. 333,297, Feb. 16, 1973, Pat. No. 3,831,957. This application June 17, 1974, Ser. No. 480,202
Claims priority, application France, May 16, 1972, 72.07773
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T 2 Claims



1. A safety toe-end device for a ski binding comprising

a support mounted upon the upper surface of a ski;

a shaft carried by said support and defining a pivot axis extending perpendicular to said surface of said ski;

a thrust element on said support for movement parallel to said surface and perpendicular to said axis;

a spring on said support biasing said thrust element in one direction;

an abutment disposed ahead of said support in said direction and provided with a recess opening toward said support, said abutment being shaped to engage the toe of a ski boot;

a pair of rollers on said abutment received in said recess and having axes parallel to said pivot axis; and

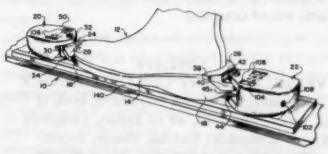
means mounting said abutment on said shaft for swinging movement about said pivot axis, said thrust element having an end receivable between said rollers and yieldably indexing said abutment in a position in which said abutment engages said toe of said boot.

3,892,422

ADJUSTABLE SAFETY BINDINGS FOR SKIS

Richard E. Jaques, Glenview, and Burton L. Siegal, Skokie, both of Ill., assignors to Richard E. Jaques, Glenview, Ill.

Filed Mar. 13, 1974, Ser. No. 450,723
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T 16 Claims



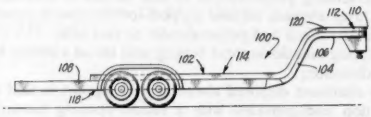
1. A binding assembly for releasably retaining toe or heel portions of a ski boot positioned on a ski, said assembly comprising, a housing having at least parallel top and bottom walls and front and rear end walls disposed generally normal to the top and bottom walls, a toe or heel clip retained on the housing adjacent said front end wall, cavity on the undersurface of

the housing opening to the bottom wall, a vertically disposed restraining member positioned at a first end thereof in the cavity and secured at a second end thereof to the ski to restrain movement of the assembly except upon exertion of an impact force of pre-selected magnitude thereagainst, the restraining member including a pivot standard terminating at the second end and a spherical portion mounted on the standard at the first end, said spherical portion being positioned at a location in the cavity closer to said rear end wall than said front end wall, a horizontally disposed engagement bar retained in the cavity juxtaposed the spherical portion for releasably maintaining the assembly in the first rest position, said rear end wall having a generally arcuate shaped portion cojoined with the bottom wall, the assembly being pivotal in opposite directions along the horizontal plane parallel to the ski surface and in the upwardly direction in the vertical plane normal to the ski surface, said pivotal movement in the upwardly direction being effected by pivoting of the housing about said arcuate portion when an upward force is exerted upon the toe or heel clip spaced from the spherical portion, whereby exertion of the force against the assembly will release the spherical portion from the engagement bar to permit the assembly to move to a second release portion to release the boot toe or heel.

3,892,423
TRAILER

Marjorieann M. Smith, 3825 Valley Blvd. No. 59, Walnut, Calif. 91789

Filed Oct. 29, 1973, Ser. No. 410,536
Int. Cl. B60p *1/28*
U.S. Cl. 280—106 T **3 Claims**



1. A trailer to be towed by a pickup truck or the like having a rear cargo space mounting a fifth wheel coupling, comprising:

a frame having a rear normally generally horizontal cargo bed and a front normally generally horizontal hitch tongue located above the level of said cargo bed,

said frame including main longitudinal frame members having generally parallel and normally generally horizontal rear end portions along the sides of said cargo bed and opposite end portions which curve upwardly and inwardly toward one another and then forwardly and inwardly toward one another and are joined at their front extremities to form said hitch tongue, and cross frame members joining said longitudinal frame members,

ground wheels mounted on said frame at opposite sides of said cargo bed, and

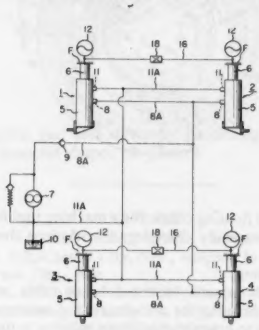
a coupling member mounted on the underside of said hitch tongue adjacent its front end for pivotal connection to said fifth wheel coupling.

3,892,424
VEHICLE-HEIGHT CONTROL DEVICE

Noriyuki Takahashi; Hiromitsu Miyahara, both of Tokyo, and Hidehiko Inoue, Oimachi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1974, Ser. No. 449,469
Claims priority, application Japan, Mar. 12, 1973, 48-28785
Int. Cl. B60g *11/26*
U.S. Cl. 280—124 F **9 Claims**

1. A vehicle-height control device for use on a vehicle between the body and the wheels thereof, said device comprising telescopic hydraulic shock absorbers arranged between the body and respective wheels of the vehicle, each including a hollow inner cylinder, an outer cylinder slidably fitted over said inner cylinder and in fluid communication therewith, a buffer valve between said cylinders to provide a resistance to flow of fluid in the shock absorber between said inner and outer cylinders upon relative sliding movement thereof, during extension and contraction of the shock absorber, said outer cylinder having a fluid inlet port in communication with a source of fluid under pressure, said outer cylinder also having a fluid outlet port in communication with ambient atmosphere, and control valve means between said inner and outer cylinders for placing said fluid inlet port in communication with the interior of the shock absorber upon contraction

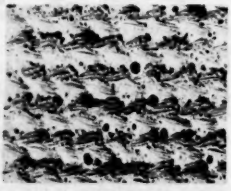


thereof below a predetermined axial length and for placing said fluid outlet port in communication with the interior of the shock absorber upon extension thereof above said predetermined axial length, said control valve means providing a resistance to fluid flow larger than that of said buffer valve, said control valve means comprising a body mounted between said cylinders and having a pair of upper and lower annular grooves facing said inner cylinder, said upper and lower grooves having a predetermined vertical spacing with a land portion formed therebetween, said inner cylinder having a through aperture disposed in a position to be closed by the land portion between said upper and lower annular grooves with the shock absorber in a normal length configuration, said upper and lower annular grooves being in communication with said outlet and inlet ports, respectively.

3,892,425
AIR BAG

Hiroshi Sakairi; Tetuyosi Tezuka, and Noboru Watanabe, all of Kyoto, Japan, assignors to Gumze Ltd., Japan

Filed Dec. 26, 1972, Ser. No. 318,479
Claims priority, application Japan, Dec. 23, 1971, 47-2602
Int. Cl. B60r *21/10;* **B32b** *5/04, 5/18*
U.S. Cl. 280—150 AB **4 Claims**



1. A vehicle safety device comprising an inflatable confinement normally stored in a non-operating state and means coupled to the confinement to inflate the confinement, and wherein the confinement is adapted to receive an occupant

when the occupant is moved relative to the vehicle upon the vehicle being abruptly brought to a halt; said confinement being made of a composite material comprising a gas permeable stretchable nylon or polyester knitted fabric and an elastomer coating layer on one surface of the knitted fabric and having microporous openings, the knitted fabric having higher stretchability than the elastomer coating layer such that the loops of the knitted fabric and the microporous openings of the elastomer coating layer are enlargeable by stretching as the confinement is inflated when the vehicle is brought to an abrupt halt to maintain the internal pressure of the inflated confinement at a substantially constant level, and at the time the occupant is forced into the inflated confinement in striking contact therewith are further enlargeable by the resulting energy of impact causing the formation of new openings in the elastomer coating by the difference in stretchability between the knitted fabric and the coating layer thereby maintaining the internal pressure of the confinement at a constant level.

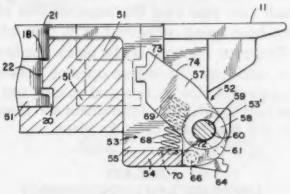
2. A vehicle safety device comprising an inflatable confinement normally stored in a non-operating state and means coupled to the confinement to inflate the confinement, and wherein the confinement is adapted to receive an occupant when the occupant is moved relative to the vehicle upon the vehicle being abruptly brought to a halt; said confinement being made of a composite material comprising a gas permeable stretchable nylon or polyester knitted fabric and an elastomer coating layer on one surface of the knitted fabric and having macroporous openings, the knitted fabric having higher stretchability than the elastomer coating layer such that the loops of the knitted fabric and the macroporous openings of the elastomer coating layer are enlargeable by stretching as the confinement is inflated when the vehicle is brought to an abrupt halt to maintain the internal pressure of the inflated confinement at a substantially constant level, and at the time the occupant is forced into the inflated confinement in striking contact therewith are further enlargeable by the resulting energy of impact causing the formation of new openings in the elastomer coating by the difference in stretchability between the knitted fabric and the coating layer thereby maintaining the internal pressure of the confinement at a constant level.

3,892,426

FIFTH WHEEL PLATE ASSEMBLY FOR TRAILER HITCH

Ray L. Ferris, Thornton, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed June 21, 1974, Ser. No. 481,714
Int. Cl.[2] B62D *53/10*
U.S. Cl. 280—432 **9 Claims**



1. A fifth wheel plate assembly for connection with the kingpin of a trailer,

comprising a plate having a substantially circular opening for receiving said king pin and an entry slot in communication therewith,

locking means on said plate movable into engagement with said king pin for releasably locking the same within said circular opening to connect the kingpin and the trailer,

the improvement comprising,

an auxiliary lock including a locking member positioned within said entry slot in longitudinally spaced relation relative to said circular opening, said locking member including an abutment,

means connecting said locking member to the underneath side of said plate for hinging movement from a position blocking release of a kingpin within said circular opening to a position wherein a major portion of said locking member is disposed in an out-of-the-way position and said kingpin is free to move through said slot relative to said circular opening,

means biasing said locking member to said blocking position,

latch means being disposable in engagement with said abutment when said locking member is moved from said blocking position to said out-of-the-way position, said biasing means urging the abutment of said locking member into engagement with said latch means to hold said locking member in said out-of-the-way position, and

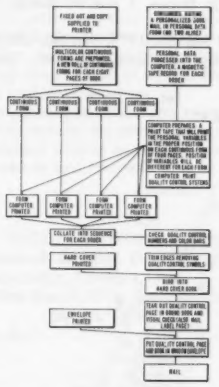
said locking member including means extending across the slot and engaged by said kingpin moving through said slot for moving said locking member to effect disengagement of said abutment with said latch means whereby said biasing means returns said locking member from said out-of-the-way position to said blocking position.

3,892,427

PERSONALIZED COMPUTER PRINTED HARD COVERED BOOK

Joseph Stephen Kraynak, Van Nuys, Calif., and Arthur Blumenfield, East Chester, N.Y., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed Dec. 20, 1972, Ser. No. 317,016
Int. Cl. B42d *1/00*
U.S. Cl. 281—15 R **8 Claims**



1. The method of preparing a personalized hard covered story book having variable printed data of a personal nature and non-variable printed copy which utilizes a computer to print at least the personalized portions of the text comprising the steps of:

a. preprinting the pages of a book with non-variable copy and art materials on continuous form computer printing sheet material to produce a preprinted continuous form computer printing sheet material;

b. inputting to a computer variable data for each personalized copy of the book;

c. introducing said preprinted continuous form sheet material into a computer printer in a manner such that a completed printed text will be produced for each set of variable data;

d. printing said variable data including quality control indicia on said preprinted continuous form sheet material;

e. cutting said continuous form printout materials to a size to form pages;

f. collating the pages from the printer into the proper sequence for each individual personalized book;
g. inspecting the quality control indicia on each of said collated pages to determine that the book is properly collated;
h. trimming away portions of said pages to remove quality control marks therefrom; and,
i. binding said pages into a hard cover book.

3,892,428

SELF-REGENERATIVE CARBOGRAPHIC ARTICLES COMPRISING A LAYER INTERPOSED BETWEEN THE SUPPORT AND THE INK-RELEASING COATING

Sergio Sala, Via Pinamonte da Vimercate, 6, and Cuneo Ambrogio, Via Durini 7, both of, Milano, Italy

Filed Apr. 12, 1971, Ser. No. 133,399

Claims priority, application Italy, Apr. 13, 1970, 23224/70

Int. Cl. B41c *1/06*

U.S. Cl. 282—28 R **7 Claims**

1. Self-regenerative carbographic articles comprising a support and an inked cellular coating having improved characteristics of longevity and reproduction and interposed between said support and inked coating, a homogeneous layer consisting essentially of sperm oil and a film-forming polymer suitable to adhere both to the support and to the inked coating and selected from the group consisting of polyvinylidene chloride, chlorinated rubber, and acrylic polymers, the amount of sperm oil being from about 30 to 50% based on the weight of the polymer.

3,892,429

LOAD-CARRYING PUSH-CARRIAGE

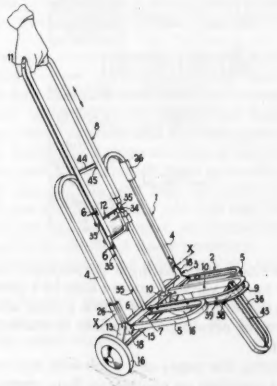
Max Hercovici dit Dalmy, 2 Rue St. James, 92 Neuilly-sur-Seine, France

Filed Jan. 24, 1974, Ser. No. 436,121

Claims priority, application France, Jan. 24, 1973, 73.02530

Int. Cl. B62b *1/00*

U.S. Cl. 280—36 C **3 Claims**



1. A foldable load-carrying push-carriage capable of being put selectively in a folded up position and an unfolded position and comprising a first platform and a second platform, each platform having a transverse edge, a pivot device interconnecting the platforms for relative pivotal movement about an axis adjacent said transverse edges of the platforms, holding means carried by the first platform for pushing and handling the push-carriage, two cranked strips integral with the first platform, two rotatable wheels respectively mounted on the strips adjacent opposite ends of the transverse edges, the strips extending in parallel directions downwardly and rearwardly of the first platform on a side of the first platform opposed to the second platform when the push-carriage is in said unfolded position and rests on the ground in a stable position, the wheels being mounted on lower end portions of the strips, said strips being part of said pivot device, the pivot device comprising two pivot plates integral with the second platform, each plate having an arm portion which is pivoted to the corresponding cranked strip at a point located beyond the crank of the strip with respect to said lower end portion of the strip, and a heel portion, an abutment on each strip, the heel portion of each plate being capable of bearing, in the unfolded position of the push-carriage, against the abutment of the corresponding strip.

3,892,430

HINGED PIPE JOINT

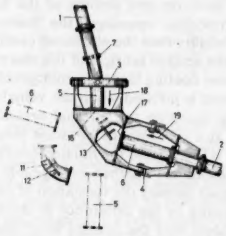
Cornelis van der Gaag, Delft, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed Apr. 22, 1974, Ser. No. 463,202

Claims priority, application Netherlands, Apr. 26, 1973, 7305854

Int. Cl. F16l *27/00*

U.S. Cl. 285—31 **3 Claims**



1. A hinged pipe joint between two rigid pipes which extend at an angle with respect to each other, said joint comprising a rigid frame having ends disposed at an angle to each other and disposed between the ends of the two pipes, each pipe being pivotably connected to one of the opposite ends of the frame and pivotably at said connection about an axis perpendicular to and co-planar with the axis of the respective pipe, said frame having cheeks to which detachably are connected the cheeks of a rigid pipe section, a flexible hose connected between each said pipe and the adjacent end of said pipe section, each hose being connected to its pipe and said pipe section by flanges at the ends of the pipes, the hoses and the pipe section, said frame having an opening between its ends and adjacent to said pipe section and shaped and sized such that through said opening the detachment and removal of said pipe section and said hoses can take place.

3,892,431

AIR HOSE ANTI-DISCONNECT

Larry H. Booth, Huntington, W. Va., assignor to The Chesapeake and Ohio Railway Company, Cleveland, Ohio

Filed Dec. 13, 1973, Ser. No. 427,011

Int. Cl. B60d *1/08;* **B61g** *5/08;* **F16b** *55/00*

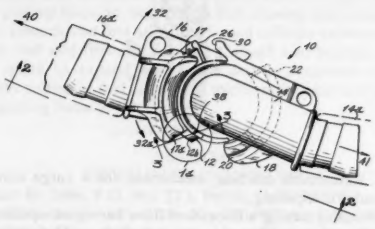
U.S. Cl. 285—79 **4 Claims**

1. An interlocking hose coupling having at least first and second rotatably engaging housings which couple respectively associated hoses, said coupling being disengageable when sufficient separating forces are exerted axially along said hoses, said coupling comprising:

a. a first stop means disposed on said first housing arranged to contact said second housing and to thereby impede rotation of said second housing with respect to said first housing when said second housing is rotated in a first

direction so that said housings do not become inadvertently separated by rotational movement in said first direction; and

b. a second releasable stop means permanently secured to one of said housings and normally urged to a position for contacting the other housing and thereby impeding rotation of said second housing with respect to said first housing when said second housing is rotated in a second direction so that said housings do not become inadvertently separated by rotational movement in said second direction;



wherein said first and second stop means limit rotational movement in said first and second directions to a predetermined rotational arc when said housings are rotatably engaged;

wherein said second releasable stop means controllably permits the rotational disengagement of said second housing from said first housing when actuated; and

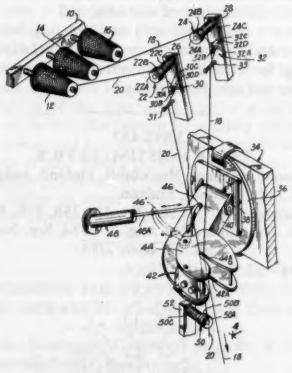
wherein neither of said first and second stop means impedes separation of said first and second housings by separating forces exerted axially along said hoses.

3,892,432

CONTINUOUS YARN DRAWING METHOD AND APPARATUS

George A. Ingus, 44 Birch St., Englewood Cliffs, N.J. 07632

Filed Mar. 1, 1974, Ser. No. 447,099
Int. Cl. A01d *59/04*
U.S. Cl. 289—1.5 **16 Claims**



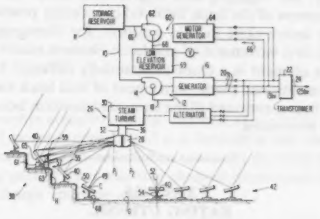
1. Apparatus for providing a continuous supply of yarn to an end use location comprising a plurality of yarn packages furnishing respective active and inactive yarn elements, means for guiding said yarn elements toward said end use location, means for monitoring the tension in said active yarn element between said guiding means and said end use location, and connecting means responsive to said monitoring means detecting a change in tension in said active yarn element for coupling said inactive yarn element to a segment of said active yarn element.

3,892,433

DIRECT SOLAR HYDRO-ELECTRIC INTEGRATED SYSTEM AND CONCENTRATING HELIOSTAT FOR SAME

Floyd A. Blake, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,669
Int. Cl. G02b *5/10*
U.S. Cl. 290—52 **11 Claims**



1. In an existing hydro-electric power plant including a hydro-electric generator means of given capacity powered by water stored in a reservoir upstream of said hydro-electric generator means, an electrical transmission network connecting said hydro-electric generator means to an electrical load, the improvement comprising:

a solar power generator means having a capacity matching that of said hydro-electric generator means, and said transmission network including means for selectively connecting either or both of said generator means to said electrical load,

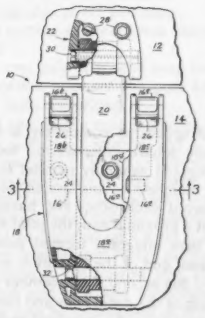
whereby, integrating the solar and existing hydro-electric power plant permits the output of the power installation to be increased without an overall increase in the use of water stored by said reservoir.

3,892,434

TOGGLE-ACTION FASTENER

William F. Caldwell, Portland, Oreg., assignor to Huntington Rubber Corporation, Portland, Oreg.

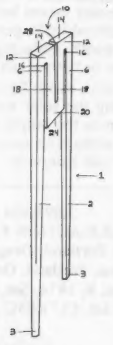
Filed Jan. 9, 1974, Ser. No. 432,080
Int. Cl.² E05C *5/02*
U.S. Cl. 292—247 **11 Claims**



1. In an overcenter-type draw fastener for releasably securing a pair of structural bodies together, comprising

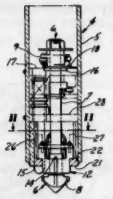
a catch element mountable on one of said bodies,
an anchor mountable on the other of said bodies in opposed relation to said catch element,
a latch element engageable with said catch element and movable in a plane relative to it, and
a link operatively interconnecting said anchor and latch element and locating the latch element for pivotal movement in said plane into and out of an overcenter position for the fastener wherein said latch and catch elements are disposed in releasable, fastened interengagement,
means for releasably locking said fastener in said overcenter position, including means forming first and second lock components in said catch and latch elements, respectively, for engaging and interlocking upon said pivotal movement of the latch into said overcenter position, and, once interlocked in said position, for disengaging only upon first movement of said latch element relative to said catch element in a plane substantially different from said first-mentioned plane, movement of said latch element in said first-mentioned plane from said position being otherwise prevented.

3,892,435
EATING UTENSIL
Shawn Huey, 410 Atkinson Dr. - No. 461, Honolulu, Hawaii 96814
Filed June 21, 1973, Ser. No. 372,300
Int. Cl. B25b *9/02*
U.S. Cl. 294—16 **5 Claims**



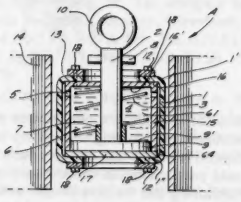
1. Eating utensil apparatus comprising a single, unitary, continuous generally square cross-section rod-like member formed in two elongated generally parallel first and second straight chop-stick members having spaced distal ends which may be moved toward each other and having joint means integrally formed at a proximal end, the joint means comprising a re-entrantly bent integrally formed portion which extends from a proximal end of the first stick member sequentially inward toward the second stick member and downward in a general direction of the distal ends and then extends over and upward then over toward a proximal end of the second stick member, where the portion is integrally connected with the second stick member, for permitting movement of the distal ends toward each other and for encouraging separation of the distal ends.

3,892,436
RETRACTABLE LATCH MECHANISM FOR CARGO CONTAINER SPREADERS
Jack E. Fathauer, Roxboro, N.C., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Apr. 11, 1974, Ser. No. 460,112
Int. Cl. B66c *1/00*
U.S. Cl. 294—81 SF **11 Claims**



1. Retractable latching mechanism for a cargo container spreader comprising:
a housing having a floor, said floor having an opening;
a twistlock member comprising a shaft supported for rotation about its longitudinal axis and extending vertically within said housing, and a horizontally oblong latch head fixed to the lower end of said shaft;
guide means for laterally supporting said member through movements lengthwise of said axis through said opening between a position locating said latch head in spaced subjacent relation to said floor and a position at least partly within said housing and said opening;
retractable boss means for protecting said member from lateral forces connected with said member to be carried thereby upwardly from and downwardly to a lowest position wherein a lower portion of the boss means projects through said opening at the lowest position of said member into close proximity with the head, said lower portion having a transaxial cross sectional contour in general conformity with the transaxial maximum horizontal cross section of the head;
stop means in said housing for laterally engaging an upper portion of said boss means at said lowest position of said member to fix the boss means against movement in a direction transversely of said axis; and
power means connected with and reacting between said member and supporting means in fixed relation with said housing for effecting said vertical movements of said member and said boss means.

3,892,437
CENTER HOISTING DEVICE
Pentti Vainamo Makinen, Haukilahti, Finland, assignor to Oy Finnlines Ltd., Helsinki, Finland
Continuation-in-part of Ser. No. 331,258, Feb. 9, 1973, abandoned. This application Aug. 2, 1974, Ser. No. 494,371
Int. Cl. B66c *1/54*
U.S. Cl. 294—93 **4 Claims**



1. An improved center hoisting device for rolls and similar pieces having a hollow core member, said device comprising

a hydraulic cylinder having first and second opposite ends and adapted to be inserted inside of the core of said roll and including a piston located within the cylinder for movement between two extreme positions, and a piston rod secured to said piston and extending through said first end of the cylinder; a resilient cover attached on the hydraulic cylinder and enclosing at least a portion of the exterior of the hydraulic cylinder facing the core member of the roll to define an expandable space between the cover and the exterior of said cylinder, said cylinder having an aperture formed therein adjacent said first end of the cylinder beyond the extreme positions of said piston for providing communication between said space and the inside of the cylinder whereby, application of a pulling force to said piston rod causing said piston to move towards said first end, fluid in said cylinder between said piston and said first end is urged through said aperture into said space to expand said space and said resilient cover thereby to engage said cover with said core member and allow said pulling force to lift said roll.

3,892,438

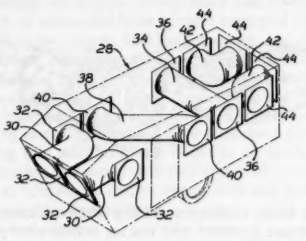
AIR CHANNELING MEANS

Chester H. John, P.O. Box 713, Perris, Calif. 92370

Continuation-in-part of Ser. No. 856,097, Sept. 8, 1969, abandoned. This application July 12, 1972, Ser. No. 271,174

Int. Cl. B60j *9/00*

U.S. Cl. 296—1 S **2 Claims**



2. In a land recreational vehicle, means for channeling the flow of air normally surrounding said vehicle from any higher pressure zone in the exterior areas adjacent the front and sides of the vehicle to any lower pressure zone in the exterior areas adjacent the sides and rear of the vehicle, other than from a higher pressure zone adjacent the front to a lower pressure zone adjacent the rear of said vehicle, said means comprising flexible tubing of the type which can be expanded and collapsed in accordion-like fashion for bending and length adjustment purposes, and accessory means to permit the temporary installation of said tubing between recreational vehicle window openings positioned so that said channeling of the flow of air from higher to lower pressure areas adjacent the outer walls of the vehicle takes place through said tubing.

3,892,439

ARRANGEMENT FOR PREVENTING THE SOILING OF DEVICES ARRANGED AT THE REAR END OF MOTOR VEHICLES

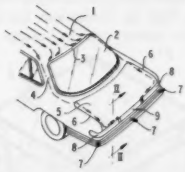
Hans Gotz, Boblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Dec. 15, 1972, Ser. No. 315,456

Int. Cl. B62d *25/08*

U.S. Cl. 296—137 R **18 Claims**

1. In an arrangement for preventing the soiling of vehicle devices, said devices being mounted on the rear end of motor vehicles, the improvement comprising a collecting channel means for collecting soiled water forming at the rear end of the motor vehicles, said collecting channel means being mounted on said rear end above said devices and extending at least over distances corresponding to structural lengths of the devices, said collecting channel means discharging the soiled water within an area free of said devices, wherein the collecting channel means extends over the entire width of the rear end of the vehicle and is provided with discharge aperture



means within areas free of said devices, wherein the collecting channel means is constructed as a decorative rod, and wherein said decorative rod includes an upwardly directed projection forming part of the collecting channel means and containing the discharge aperture means.

3,892,440

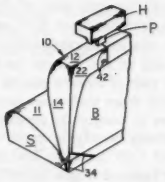
AUTOMOBILE SEAT COVER

Richard J. Dudley, and Harold A. Dudley, both of Fremont, Ohio, assignors to S. E. Hyman Company, Fremont, Ohio

Filed Feb. 19, 1974, Ser. No. 443,360

Int. Cl. A47c *31/10*

U.S. Cl. 297—229 **6 Claims**



1. A throw type seat cover for at least the back of a seat of a vehicle having a headrest supported by at least one post above the top of the back, said cover comprising:

A. a front cover panel portion,

B. peripheral edge cover portions,

C. a flange portion along the rear section of said edge portion, and

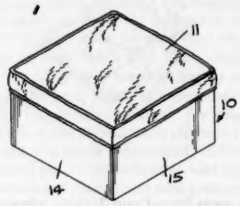
D. at least one pair of spaced snap fastener parts on said flange portion adjacent the post for the headrest said fastener parts comprising:

a. a stud part with a stud extending outwardly from one side of said flange portion, and

b. a cap part with its concave portion extending inwardly from the other side of said flange portion,

said fastener parts being spaced inwardly from the outer edge of said flange portion, whereby said fastener parts can not be fastened until a slit is made inwardly from the free edge of said flange portion between said fastener parts to the post so that the edge portion can surround said post and the edges of said slit flange portion may be overlapped so that said snap fastener parts may be snapped together to hold said slit in said flange together around the post, and whereby said cover also can be used without slitting when there is no headrest.

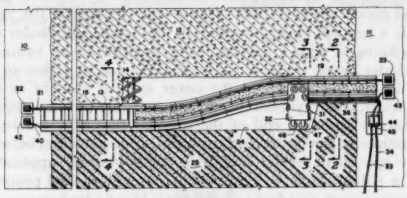
3,892,441
PAPER BOARD SEAT STRUCTURE
Benjamin Roeshman, 206 Rodney Cir., Bryn Mawr, Pa. 19010
Filed Jan. 9, 1974, Ser. No. 431,940
Int. Cl. A47c *3/00, 9/12*
U.S. Cl. 297—461 **2 Claims**



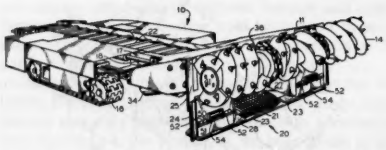
1. A seat assembly comprising a four-side box-like structure formed basically of a flat blank of stiff sheet material which is cut and scored to provide a plurality of right-angularly related side wall panels each having at its opposite ends corresponding relatively foldable top and bottom closure panels, the closure panels associated with one opposed pair of said side wall panels being each split into two relatively foldable panels and those associated with the other pair of said side wall panels being unsplit, all of said closure panels having relatively short end flaps adapted to be inturned normal to the planes of their associated panels, the split pair of closure panels being individually inwardly foldable from their associated side wall panels into coplanar relation to conjointly constitute an inner layer of closure panels at the bottom and top ends of said structure, the unsplit pair of closure panels being also individually inwardly foldable from their associated side wall panels into coplanar relation to conjointly constitute an outer layer of closure panels closely overlying each said inner layer of closure panels, all of said inwardly foldable closure panels having convergingly tapered edges to render the same non-interfering with one another as the same are infolded into their closed positions, each said split pair of closure panels providing a tapered slot between their proximate edges terminating short of their respective fold lines and being further separated from one another by a short slit extending to said fold lines from the apex of said tapered slot in longitudinal continuation thereof, each of said tapered slots formed between each split pair of said inwardly folded closure panels being in horizontal alinement to conjointly provide an opening extending crosswise of the structure between a spaced pair of said short slits into which said inturned end flaps of said unsplit panels may be inserted to secure the same in their closed positions at the top and bottom ends of the structure.

3,892,442
MINING METHOD
Albert T. Janssen, Thousand Oaks, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Aug. 16, 1973, Ser. No. 388,747
Int. Cl.[2] E21D *11/00*
U.S. Cl. 299—11 **5 Claims**

1. A method for underground mining comprising advancing a cutting device along one longitudinal wall of a mine shaft to remove a mining product therefrom and substantially concurrently advancing a foam support material dispensing device within said shaft behind said cutting device and in the same direction to progressively fill at least a portion of the enlarged void of said shaft created by the removal of said mining product so as to control roof fall and subsidence of the overlaying earth.



3,892,443
CONTINUOUS CUTTING AND GATHERING APPARATUS FOR A CONTINUOUS MINING MACHINE
E. M. Arentzen, Charleroi, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Nov. 5, 1973, Ser. No. 412,608
Int. Cl. E21c *35/20*
U.S. Cl. 299—67 **10 Claims**

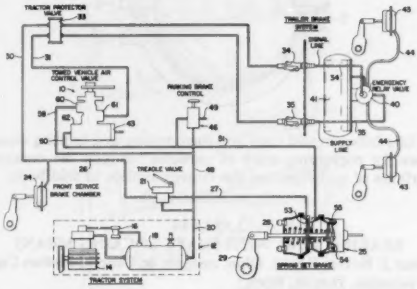


1. A low seam, continuous mining machine, comprising:
a main frame provided with tractor crawlers for propelling the machine;
a sump frame slidably mounted on the forward end of the main frame for movement toward a mine face while the main frame is stationary;
hydraulic means for sliding the sump frame forward of the main frame;
a mining head mounted on the forward end of the sump frame for movement therewith into a mine face, the mining head being long enough to cut a path wider than said machine and including a shaft mounted for rotation at the forward end of the sump frame and disposed transverse to the direction of movement of the sump frame;
a plurality of helical cutter members mounted about the rotatable shaft, the helical cutter members being shaped to direct mined material inwardly of the ends of the shaft; means for rotating the shaft and associated cutter members mounted thereon;
a backup panel mounted near the forward end of the sump frame just rearward of the periphery of the helical cutters and substantially parallel thereto;
a gathering conveyor mounted on said sump frame and having its forward end disposed beneath and in close proximity to the mining head for gathering the mined material fed to it by the helical cutter members, said conveyor extending perpendicular to the mining head toward the rear of the machine; and
substantially vertical dozer blades disposed at each side of the conveyor just rearward of the periphery of the helical cutter members and substantially parallel thereto, the dozer blades extending upwardly to overlap the backup panel to provide a vertical surface against which the helical cutter members may move mined material inwardly to the central gathering conveyor.

3,892,444
PNEUMATIC BRAKE SYSTEM

Harold Durling, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Mar. 11, 1974, Ser. No. 449,707
Int. Cl. B60t 15/16
U.S. Cl. 303—13 4 Claims



1. A control valve in combination with a tractor-trailer pneumatic brake system for braking said tractor during normal operating and parked phases when said tractor is either coupled to or uncoupled from a trailer equipped with a trailer pneumatic brake system, said tractor system including a continuous source of compressed air when said tractor is operating, a spring-set actuator for braking said tractor, a parking control valve having an inlet connected to said source, an outlet connected to said actuator and a vent, said parking valve being manually operable from a released position communicating said inlet with said outlet to an applied position communicating said outlet with said vent, and coupling means operable to couple said tractor system with said trailer system, said control valve comprising:

a valve body having

a first port in fluid communication with said source of compressed air,

a second port in fluid communication with said coupling means,

a third port in fluid communication with said outlet of said parking control valve,

a fourth port in communication with atmosphere,

first plunger means and second plunger means with said valve body, said second plunger means manually operable to a valve fill mode position to provide fluid communication between said first and second ports when said parking valve is in an applied position whereby said trailer air system is supplied with air while said tractor spring-set actuator remains braked; and

said first plunger means automatically operable when said parking brake is moved to a released position to disengage said second plunger means from said fill mode position to seal said second port and provide fluid communication between said second and third ports for normal highway operation when said trailer is coupled with said tractor by said coupling means.

3,892,445
LOAD-DEPENDENT BRAKE PRESSURE PROPORTIONING VALVE

Heinrich Oberthur, Offenbach-Rumpenheim, Germany, assignor to ITT Industries, Inc., New York, N.Y.

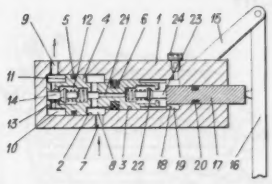
Filed Nov. 15, 1973, Ser. No. 416,339
Claims priority, application Germany, Dec. 15, 1972, 2261381
Int. Cl. B60t 8/22
U.S. Cl. 303—22 R 2 Claims

1. A brake pressure proportioning valve comprising:

a stepped cylinder having a pressure medium inlet and a pressure medium outlet to brakes to be controlled;

a stepped piston disposed axially movable in said cylinder relative to said inlet and said outlet to proportion the pressure medium coupled to said outlet dependent upon the load of the axle having said brakes to be controlled;

a control tappet disposed coaxially within said cylinder to control the axial movement of said piston dependent upon a force applied to said control tappet proportional



to said axle load, said control tappet having a smaller diameter than the adjacent end of said piston;

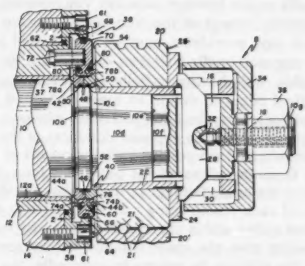
a lever mechanism connected to said control tappet to apply said force thereto; and

a first pressure medium connection disposed internally of said piston to interconnect said control tappet and said inlet and to apply pressure medium to the end of said control tappet adjacent said piston to improve the control action of said control tappet.

3,892,446
SHAFT SEAL

Charles A. Rich, Jr., Southboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Apr. 29, 1974, Ser. No. 464,836
Int. Cl. F16c 1/24, 33/72
U.S. Cl. 308—36.1 6 Claims



1. For use in combination with a roll shaft journalled for rotation in an eccentric sleeve which is in turn journalled for rotation in a housing, with one end of the shaft protruding axially from the housing to receive a roll in removable engagement thereon, apparatus for providing a seal between the roll shaft and the housing, comprising: a circular first sealing assembly mounted on the roll shaft for rotation therewith, said first sealing assembly having a peripheral first groove formed between a pair of opposed first flanges extending radially outwardly from a base section, a second sealing assembly surrounding said first sealing assembly, said second sealing assembly having an outer section fixed relative to said housing, an annular inner section supported by said outer section with a portion thereof protruding into said first groove, said protruding portion having axially opposed second grooves formed between the center thereof and second flanges located adjacent to said first flanges, and means seated in said second

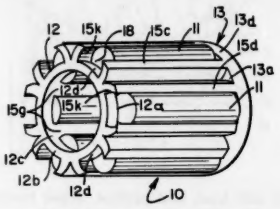
grooves for urging said second flanges into frictional contact with said first flanges.

3,892,447

PLASTIC CAGES FOR ROLLER BEARINGS

Peregrinus Gruber, and Gerald Seidelman, both of 3382 N. Avondale Ave., Chicago, Ill. 60618

Division of Ser. No. 315,622, Dec. 15, 1972. This application Oct. 17, 1973, Ser. No. 407,214
Int. Cl. F16c *19/20*
U.S. Cl. 308—217 **1 Claim**



1. A one-piece molded plastic roller bearing cage comprising two spaced coaxial annuli in spaced parallel planes, each annulus having flat side faces and inner and outer cylindrical faces, a plurality of equally spaced ribs extending between said annuli, the outer diameter of one smaller annulus being equal to the inner diameter of the other larger annulus, each rib extending radially between the coaxial cylindrical surfaces defined by the inner diameter of said one smaller annulus and outer diameter of said other larger annulus, said ribs extending parallel to the axis of the annuli, each rib having a Y section, the Vee top being radially beyond the straight part of the Y, the Vees extending radially inward to the cylindrical surface defined by the outer surface of the smaller annulus and extending from the inner flat face of the larger annulus to the plane determined by the outer flat face of the smaller annulus, the Vee tops each having Vee sides curved to provide a suitable cradle region between adjacent Vee portions, the sides of a rib radially inward of the Vee being concave so that one entire rib side provides a concave cradle wall to cooperate with an opposed cradle wall from an adjacent rib, a complete cradle side wall having radially innermost and outermost longitudinal edges to define an inner and outer window between adjacent ribs, the inner and outer windows respectively being terminated by the opposed side faces of the smaller and larger annuli, said rib portion radially inward of the Vee extending from the plane of the outer flat face of the larger annulus to the inside flat face of the smaller annulus, the inner window of each cradle being narrow enough to retain a suitably sized roller within the cradle region, the outer window being wider than the inner window but narrow enough to require the roller to be sprung into a cradle, the cradle sides having a radius of curvature somewhat greater than that of a roller in the cradle region, said cage being characterized by minimum plastic material, strength and ready springing of a roller into or out of its cradle.

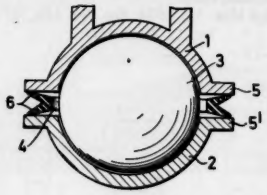
3,892,448

SPHERICAL PLAIN BEARING

Nikolaus Laing, Hofener Weg 35 bis 37, 7141 Aldingen bei Stuttgart, Germany

Filed Aug. 10, 1973, Ser. No. 387,455
Int. Cl. F16c *17/06*
U.S. Cl. 308—230 **7 Claims**

1. A spherical bearing for the mutual support of two machine elements comprising two cups each having a concave spherical sliding surface which cups are universally pivotable with respect to each other through limited arcs of travel, a single body having a convex spherical surface slidable on the convex sliding surface of each cup and axially separating said cups for a limiting clearance, and a sealing device positioned



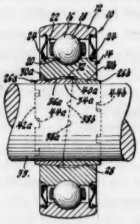
axially between said cups and surrounding said limiting clearance for preventing entry of particles between the concave surfaces of said cups and the convex surface of said body.

3,892,449

BEARING RING WITH SHAFT LOCKING MEANS

Peter J. Baker, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1973, Ser. No. 410,034
Int. Cl. F16c *33/30*
U.S. Cl. 308—236 **8 Claims**



1. A bearing race ring or the like with shaft locking means comprising,
   a ring having a generally concave bore which includes a first conical portion and a second conical portion, said first and second conical portions being inclined in opposite direction toward each other,
   a first split ring having a tapered outer surface and a helical end face, said first split ring being disposed in said bore with its tapered outer surface engaging said first conical portion of said bore, and
   a second split ring having a tapered outer surface and a helical end face, said second split ring being disposed in said bore with said tapered outer surface engaging said second tapered conical portion of said bore and said helical end face engaging said helical end face of said first split ring whereby said first and second split rings are displaceable axially with respect to said ring responsive to relative rotation between said split rings.

3,892,450

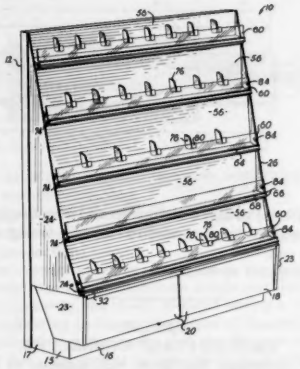
COMBINATION STORAGE AND DISPLAY RACK

Edward J. Kolster, Lexington; Jess C. Bushyhead, Kansas City, and Harvey L. Kolster, Grain Valley, all of Mo., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Filed Feb. 22, 1974, Ser. No. 444,905
Int. Cl. A47b *47/00, 87/02*
U.S. Cl. 312—117 **10 Claims**

1. A combination storage and display fixture, comprising:
   a back wall;
   stationary pocket-defining structure attached to the forward face of said back wall and presenting a plurality of superposed, stationary, transversely extending storage pockets;

an elongated, generally transversely J-shaped display rack in covering disposition to each of said storage pockets, and including a forward keeper of lesser height than the back wall of said rack which extends substantially the entire length of the latter for retaining display merchandise within said rack;



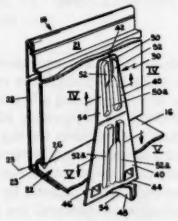
means pivotally mounting each of said racks in said disposition and permitting pivotal movement thereof with respect to the stationary storage pocket therebehind in order to allow selective access to the latter; and

frame structure supporting said back wall and display racks in inclined, merchandise receiving and displaying disposition.

3,892,451
DRAWER

Roger C. Bruins, Jension, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Oct. 11, 1973, Ser. No. 405,391
Int. Cl.[2] A47B *88/00*
U.S. Cl. 312—330 **12 Claims**



1. A drawer construction including means for mounting a divider partition therein comprising in combination:

said drawer having a bottom wall and a pair of spaced-apart side walls, each of said side walls having a generally continuous recess formed therein, said recess extending along the length of said side walls;

a plurality of tab-receiving slots formed within said recess, said tab-receiving slots being spaced apart and extending along at least a portion of the length of said recess;

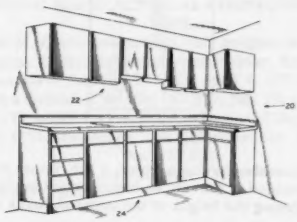
partition mounting means positionable in said drawer adjacent said side walls, said partition mounting means having tab means extending outwardly from the lower surface thereof, said tab means being adapted for selective positioning in said tab-receiving slots in said recess; and

engaging means on said partition mounting means for holding a divider partition therein between said side walls.

3,892,452
MODULAR CABINET ASSEMBLY

Chauncey L. Williams, Beverly Hills, Calif.; Alfonso Villa, and David H. Humphrey, both of Santurce, all of P.R., assignors to Duraform Inc., San Juan, P.R.

Filed Mar. 28, 1973, Ser. No. 346,680
Int. Cl.[2] A47B *47/04*
U.S. Cl. 312—330 **5 Claims**



1. A container unit comprising a first wall;

a second wall substantially perpendicular to the first wall;

a third wall perpendicular to the first wall and attached to the second wall at a first predetermined obtuse angle;

a fourth wall perpendicular to the first wall and attached to the second wall at a second predetermined obtuse angle;

a fifth wall attached to the third and fourth walls and attached to the second wall at a third predetermined obtuse angle, so that multiple container assemblies can be nested inside each other for storage and shipment;

the first wall comprising a front drawer wall;

the second wall comprising a bottom drawer wall;

the third wall comprising a left-hand side drawer wall;

the fourth wall comprising a right-hand side drawer wall;

the fifth wall comprising a rear drawer wall, said walls being integrally molded;

an upper left-hand drawer guide having an inner edge and having a lower planar surface;

a lower left-hand drawer guide having an upper planar surface parallel to the lower planar surface of the upper left-hand drawer guide;

an upper right-hand drawer guide having an inner edge and having a lower surface coplanar with the lower planar surface of the upper left-hand drawer guide;

a lower right-hand drawer guide having an upper surface coplanar with the upper planar surface of the lower left-hand drawer guide;

a left-hand drawer slide connected to the left-hand drawer wall and adapted to slide on the upper planar surface of the lower left-hand drawer guide;

a right-hand drawer slide connected to the right-hand side drawer wall adapted to slide on the upper planar surface of the lower right-hand drawer guide;

means for defining an arcuate surface connected to one of said drawer sidewalls and adapted to slide against the lower planar surface of the upper left-hand or upper right-hand drawer guide, so that vertical chatter is eliminated as the drawer is operated;

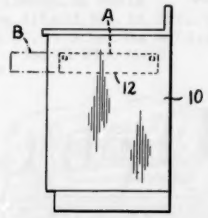
a left-hand upstanding member connected immobile with respect to the left-hand side drawer wall and adapted to slide along the inner edge of the upper left-hand drawer guide; and

a right-hand upstanding member connected immobile with respect to the right-hand side drawer wall and adapted to slide along the inner edge of the upper right-hand drawer guide, whereby horizontal chatter is eliminated as the drawer is operated.

3,892,453
DISHRACK ADJUSTMENT

Thomas Edward Daily, Herrin, Ill., assignor to Fedders Corporation, Edison, N.J.

Filed Oct. 7, 1974, Ser. No. 512,403
Int. Cl.[2] A47B *88/00, 95/00*
U.S. Cl. 312—351 12 Claims



1. In a dishwasher having a frame, a tub, upper and lower dishracks mounted in the tub, an improvement in the mechanism for adjusting the height of the upper dishrack comprising:

first and second vertically movable dishrack support brackets on opposite sides of the tub, said movable brackets having a tub facing surface and an outboard surface,

first and second dishrack support means attached to the tub facing surfaces of said first and second dishrack support brackets respectively, said support means being adapted to be attached to the side of a dishrack to hold said dishrack against vertical movement relative to said vertically movable support brackets,

first and second rack gears attached to said outboard surfaces of said first and second movable support brackets respectively, each of said rack gears extending vertically along said outboard surfaces of said movable brackets,

first and second vertically stationery support brackets coupled to the frame of the dishwasher for horizontal movement relative to the frame of said dishwasher, said vertically stationery support brackets spaced outboard from said outboard surfaces of said first and second vertically movable support brackets respectively,

first and second rotatable pinion gears, each having an horizontal shaft, said shafts being mounted on respective ones of said vertically stationery support brackets, said pinion gears being permanently in engagement with said first and second rack gears respectively,

said vertically movable support brackets being supported solely by the engagement of said rack gears and said pinion gears,

first and second rotatable manual control means connected respectively to said first and second pinion shafts to permit operator rotation of said pinions to cause said movable support brackets to move vertically, and

first and second holding means to hold said first and second pinion gears respectively against rotational movement.

3,892,454
METHOD OF FORMING SILICON STORAGE TARGET

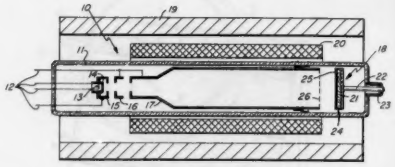
Amos Picker, Sharon, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 266,863, June 28, 1972, abandoned, which is a continuation of Ser. No. 76,957, Sept. 30, 1970, abandoned. This application Sept. 10, 1973, Ser. No. 396,028
Int. Cl. H01j *9/18*
U.S. Cl. 316—19 11 Claims

1. A method of forming an information storage device comprising:

forming a target structure by the steps comprising attaching a metal support structure to one side of a semiconductor wafer and oxidizing the other side of said semiconductor wafer;

supporting said target structure with an electrically conductive structure extending through an insulating portion of an envelope and providing an electrical connection from



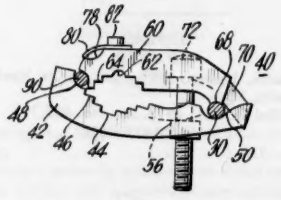
the exterior of said envelope to said metal support structure spaced from an electron source facing said oxide layer; and

evacuating said envelope.

3,892,455
GROUND CLAMP CONNECTOR

Thomas J. Sotolongo, Red Bank, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.Y.

Filed Mar. 26, 1974, Ser. No. 454,977
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 L 5 Claims

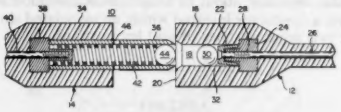


1. A clamp for electrically and mechanically connecting together at least two electrical conductors comprising: a first generally arcuate jaw member having a first end, a second end and a first recess defined by a plurality of V-shaped teeth therebetween; said first jaw member having a first nest adjacent said first end and a second nest adjacent said second end; a second generally arcuate jaw member having a first end, a second end and a second recess defined by a plurality of V-shaped teeth therebetween; said second jaw member having a third nest adjacent said first end of said second jaw member and a fourth nest adjacent said second end of said second jaw member; said first and second nests lying serially within the curvature of said first jaw member, and said third and fourth nests lying serially within the curvature of said second jaw member; said second jaw member first end terminating in a bifurcated turned up portion having an inner surface and extending selectively forwardly of said first jaw member first end, said third nest being defined by said second jaw member turned up portion inner surface and lying serially within the curvature of said second jaw member; and selectively operable fastening means pivotally coupling said first and second jaw members together whereby at least two electrical conductors placed in the conductor receiving cavities formed by said first and second recesses, said first and third nests and said second and fourth nests are coupled together when said selectively operable fastening means is tightened appropriately.

3,892,456
ELECTRICAL CONNECTOR ASSEMBLY

Julius C. Westmoreland, 7204 Plaza de la Costa, Carlsbad, Calif. 92008

Filed Dec. 26, 1973, Ser. No. 427,485
Int. Cl.[2] H01R *13/44*
U.S. Cl. 339—40 **8 Claims**

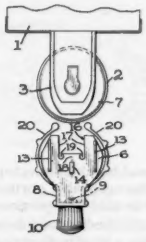


1. An electrical connector assembly comprising:
a first member including:
a body member formed from a resilient, elastic material and having a cavity therein having a predetermined cross-section,
a first contact member positioned in the cavity,
a shield member formed from a rigid material positioned in the cavity, the shield member having a cross-section conforming to the cross-section of the cavity and normally closing the cavity and the first contact member to the environment outside the body member, and
means for supporting the shield member in the cavity such that the shield member can move axially along the cavity, and
a second member including a second, tubular contact member having a hollow interior whose cross-section also conforms to the cross-section of the cavity and which can receive the shield member into its hollow interior, whereby the second contact member can penetrate between the shield member and the walls of the cavity to make electrical contact with the first contact member.

3,892,457
LOCKING MEANS FOR DOUBLE PIN FLUORESCENT LAMPS

Lewis Detch, and Olive A. Detch, both df 2133 Chalfant St., Pittsburgh, Pa. 15221

Filed Dec. 4, 1973, Ser. No. 421,658
Int. Cl.[2] H05B *33/02*; **H01R** *33/10*
U.S. Cl. 339—54 **4 Claims**

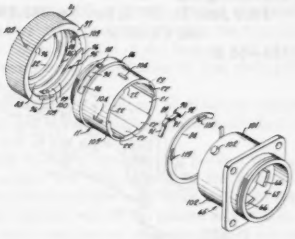


1. Locking means for a fluorescent lamp for holding said lamp in operative electrical assembly with a lamp holder means in which the lamp is mounted, comprising a base plate having a major surface for insertion between the cylindrical end portion of the lamp and the adjacent face of the lamp holder means, said base plate having means for engagement with end pin means of the lamp and provided also with first means offstanding in one direction axially of the lamp for engagement with the lamp holder means, second means extending axially of the lamp in the opposite direction for embracing the cylindrical end portion of the lamp, said means comprising a pair of resilient, radially expansible, arcuate arms, each arm being axially displaced, and separate, from the major surface of the base plate, said locking means serving, when inserted, to prevent axial rotation of the lamp with respect to the lamp holder means and insure retention of the lamp in the lamp holder means and thus to provide for operative electrical engagement of said pin means with complemental contact means of the lamp holder means, and to prevent inadvertent disengagement of the lamp from the lamp holder means.

3,892,458
COUPLING FOR ELECTRICAL CONNECTOR OR THE LIKE

Kenneth M. Clark, Beaumont, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Continuation of Ser. No. 347,821, April 4, 1973, abandoned, which is a division of Ser. No. 167,317, July 29, 1971, Pat. No. 3,727,172, which is a continuation-in-part of Ser. No. 83,782, Oct. 26, 1970, abandoned. This application Dec. 26, 1973, Ser. No. 427,801
Int. Cl. H01r *13/54*
U.S. Cl. 339—90 R **1 Claim**



1. In combination with a first body and a second body, an arrangement for coupling said first body to said second body comprising
an annular member circumscribing said first body, means retaining said annular member to said first body so that said annular member is rotatable relative to said first body and substantially axially fixed relative to said first body including
a first radially extending shoulder on said first body,
a second radially extending shoulder on said first body,
an inwardly directed flange on said annular member adjacent said first shoulder for preventing movement of said annular member relative to said first body in one direction,
said annular member having an internal annular recess, and a snap ring received in said recess and extending therefrom to a position of adjacency with said second shoulder so that said snap ring engages said first body and said annular member for preventing movement of said annular member relative to said first body in the opposite direction,
said snap ring including at least one resilient tab extending outwardly therefrom for engaging said second body and exerting a resilient force thereon when said first and second bodies are coupled and providing an electrical connection to said second body,
said annular member having an inner circumferential surface having at least one groove therein,
said groove having an opening at one end of said annular member providing an entrance thereto, said groove having an inner portion and an inclined portion interconnecting said entrance and said inner portion of said groove,
said inner portion of said groove being circumferential relative to said annular member,

the longitudinal axis of said inner portion falling in a plane that is substantially radial relative to said annular member,

a pin on said second body projecting outwardly therefrom, said pin being adapted to enter said groove and to be transmitted through said entrance and said inclined portion to said inner portion of said groove upon rotation of said annular member relative to said

first body and said second body,

said second body having an annular portion adapted to circumscribe a part of said first body intermediate said first body and said annular member when said pin so enters said groove,

and resilient detent means engaging said first body and said annular member to resist rotation of said annular member relative to said first body when said pin is in said inner portion of said groove.

3,892,459

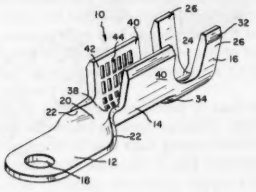
OPEN BARREL TERMINAL AND METHOD FOR TERMINATING AN ELECTRICAL WIRE THEREIN

Larry Eugene Dittmann, Harrisburg, and Timothy Allen Lemke, Dillsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 21, 1974, Ser. No. 481,590

Int. Cl. H01r *11/08*

U.S. Cl. 339—95 R **1 Claim**



1. A terminal for receiving an electrical wire therein, which comprises:

a. a wire barrel having a floor bounded on either side by a generally vertical sidewall and with the inner surface of the floor and sidewalls containing a plurality of cavities, the cavities on the upper portion of the sidewalls being longer in one dimension than the cavities on the floor and lower portions of the sidewalls.

3,892,460

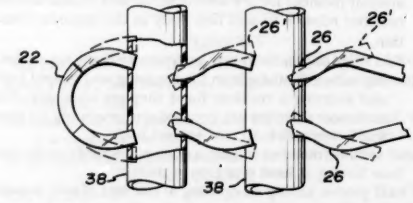
CONTACT MEANS

Hyman Izraeli, West Caldwell, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Feb. 19, 1974, Ser. No. 443,912

Int. Cl.² H01R *13/38*

U.S. Cl. 339—98 **12 Claims**



1. Contact means for an electrical connector comprising: a metallic member formed from electrically conducting material and having a base portion and leg portions, said base portion being generally planar, said leg portions being bisected by a common plane and being integral with and extending from said base portion in generally spaced parallel relationship, there being a conductor receiving slot intermediate each two adjacent ones of said leg portions, said leg portions being skewed at a similar given angle about their respective central longitudinal axes out of the plane of said base portion and planarly oriented substantially parallel to one another to cause the rotational displacement of each of said leg portions in a similar direction about its longitudinal axis upon engagement with a conductor inserted within an associated slot intermediate two adjacent ones of said leg portions.

3,892,461

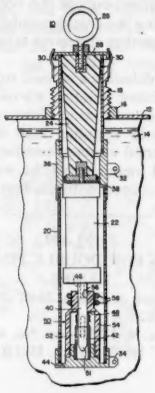
LOAD-BREAK CONNECTOR

August I. Keto, Jefferson City, Mo., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed July 10, 1974, Ser. No. 487,349

Int. Cl. H01r *13/52*

U.S. Cl. 339—111 **9 Claims**



1. An electrical load-break connector comprising:

first and second disengageable portions;

A probe attached to said first portion; and,

a probe receiver attached to said second portion;

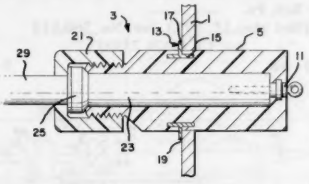
said probe including a longitudinal conducting member and a longitudinal insulating member which are attached together;

said probe receiver including a contact which is engageable with said longitudinal conducting member to provide an electrical connection, a sleeve constructed of an insulating material and disposed in relation to said contact in such a manner that the probe extends through an opening in said sleeve when said contact is engaged with said probe, and magnetic means for placing a magnetic field between said sleeve and said longitudinal insualting member, said magnetic field influencing the path of any arc which develops between said sleeve and said longitudinal insulating member.

3,892,462
PLASTIC HIGH VOLTAGE RECEPTACLE WITH EMBEDDED METAL FLANGE

Douglas Wade Glover, Harrisburg, and Robert Eden Fry, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 25, 1973, Ser. No. 382,611
Int. Cl.² H01R *9/16*
U.S. Cl. 339—126 **2 Claims**



1. A high voltage electrical receptacle which comprises in combination,

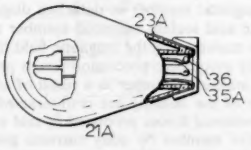
a. a body of plastic electrically insulating material having a hollow interior region closed at one end by an integral wall and an electrical contact extending through said plastic material of said wall into said hollow region at one end of said cavity, and

b. a metal flange member electrically isolated from said contact and having a head and a leg, said head being embedded in said plastic material and said leg extending externally of said plastic material, said plastic material being in compression about said flange member, said material of leg being of small crosssectional area relative to said head to minimize heat transfer into said body.

3,892,463
SNAP-LATCHING, SNAP-LIGHTING ELECTRIC LAMPS AND METHODS FOR MAKING SAME

John J. Horan, 420 Quigley Ave., Willow Grove, Pa. 19090

Continuation-in-part of Ser. Nos. 883,854, Dec. 8, 1969, abandoned, and Ser. No. 888,214, Dec. 8, 1969, Pat. No. 3,722,088. This application Sept. 13, 1971, Ser. No. 179,677
Int. Cl.² H01R *13/66*
U.S. Cl. 339—144 R **13 Claims**



1. A method for endowing a baseless glass electric-lamp body with a snap-latching, snap-lighting characteristic,

said method being applicable to a lamp body having a plurality of conductive leads issuing from the lower end thereof and comprising;

reverting said leads divergently upward from said end and along the surface thereabove of said body; and

depositing upon said surface near said end and upon said leads below the upper ends of said leads camming overlay of insulative material,

said overlay being applied with its upper edge sufficiently thick as to constitute an outward step discontinuity with respect to said surface,

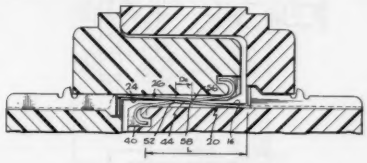
said leads extending upwardly beyond said upper edge of said overlay and being exposed to form electrical terminals thereabove,

whereby said body is converted to a snap-latching and snap-lighting lamp via the insulative separation of said terminals from said end by said overlay.

3,892,464
CONTACT ELEMENT FOR ELECTRICAL CONNECTOR

Wendell L. Griffin, Burbank, Calif., assignor to Viking Industries, Inc., Chatsworth, Calif.

Filed Mar. 19, 1973, Ser. No. 342,841
Int. Cl. H01r *25/02, 13/64*
U.S. Cl. 339—184 M **3 Claims**



1. An electrical connector comprising:

a pair of frames, each having at least one contactor surface with a plurality of uniformly spaced elongated grooves and a plurality of pockets formed at the front end of each groove below the level of the bottom wall of the groove, said frames being interfittable so that their grooves face one another; and

a plurality of contact elements, each having a shank fixed to a frame and a blade extending forwardly from the shank along one of the grooves;

each blade having a straight root portion with a rear end lying against the bottom wall of the groove, said root portion extending forwardly at an incline of less than 45° with the bottom wall of the groove and with its front end lying above the groove when the frames are disengaged from each other, said blade having a contact region with at least a rear half which extends substantially straight and at a constant height above the groove and with a front end that is convexly curved uniformly across the entire width of the blade and which forms a projection that projects above said substantially straight rear half of the contact region by less than the thickness of the blade, and said blade having a forward portion with a rear region which extends substantially straight from said projection at an incline towards the bottom of the groove and with a front region that forms a horseshoe bend and projects in a pocket of the frame.

3,892,465
HOLOGRAPHIC SYSTEMS FOR RECORDING AND READING OUT REFRACTIVE INDEX GRATINGS WITHIN THE BODY OF A PHOTOSENSITIVE ELECTRO-OPTICAL MATERIAL

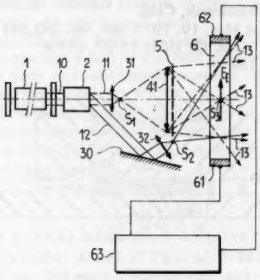
Francois Micheron, and Guy Bismuth, both of Paris, France, assignors to Thomson-CSF S.C.P.I., Paris, France

Filed Sept. 7, 1973, Ser. No. 395,079
Claims priority, application France, Sept. 8, 1972, 72.31873
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **6 Claims**

1. Holographic system for recording and reading out, within the volume of a photosensitive electro-optical material, an optical grating; said optical grating being constituted by refractive index variations of said material and presenting an electrically variable optical efficiency; the operation of said system including a recording phase and a read-out phase and said system comprising:

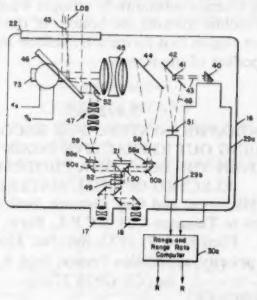
optical means for producing, during said recording phase, photo-excitation of said material by at least one interference fringes pattern and for illuminating, during said read-out phase, said material by a monochromatic light beam;

bias means for applying a variable electric D.C. field;
said photoexcitation of said material generating said index variations thereof, said fringes pattern thus constituting said optical grating;
said material exhibiting a non-linear relationship between the values of its double refracting property and of the local electric field;



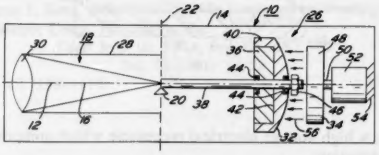
said variable electric field controlling said refractive index variations and having one recording value during said recording phase and at least one read-out value during said read-out phase,
and at least one said read-out value being distinct from said recording value and from any value included between said recording value and the inverse of said recording value.

3,892,466
LASER-SIGHT AND COMPUTER FOR ANTI-AIRCRAFT GUN FIRE CONTROL SYSTEM
Leonard Kendy, Palos Verdes Peninsula, and Richard L. Frey, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Division of Ser. No. 209,268, Dec. 17, 1971, Pat. No. 3,845,276. This application July 12, 1974, Ser. No. 488,086
Int. Cl.[2] G02B *27/32, 23/04*
U.S. Cl. 350—10 **1 Claim**



1. In a gun fire control system, a gunner's sight comprising:
a. first and second telescopic optical paths, said first path having a field of view which is wider than said second path and having a magnification that is lower than said second path,
b. both of said paths including common biocular members for said gunner and a common gimbal mounted mirror as its output member;
c. said second path including means for transmitting and receiving a laser beam along a portion of said path which includes said gimballed mirror and excludes said biocular members;
d. each of said paths including sight defining reticle means, the reticle for said first optical path having an inner circle which defines the total field of view avialable from said second path, and the reticle for said second path having an inner circle equal in diameter to the diameter of said laser beam.

3,892,467
INERTIAL STABILIZATION SYSTEM
Ihsuk Shin, Berwyn, Pa., assignor to Dynasciences Corporation, Blue Bell, Pa.
Filed May 15, 1973, Ser. No. 360,614
Int. Cl. G02b *23/00*
U.S. Cl. 350—16 **9 Claims**



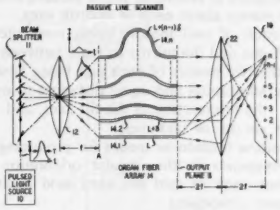
1. In an image motion compensator for an optical system having an objective supported within a housing subject to random angular motion with respect to the optical axis, a high and low frequency inertial stabilizer comprising:
a. means for angularly decoupling the objective from the housing about mutually perpendicular axes transverse to the optical axis and defining a pivot longitudinally spaced from the objective,
b. a first magnetic member rotatably supported coaxially with respect to the optical axis and arranged on the opposite side of the pivot from the objective in counterbalancing disposition therewith,
c. a second magnetic member rotatably supported on an axis fixed with respect to the housing and in spaced-apart, magnetically-coupled disposition with respect to said first magnetic member such that rotation of said second magnetic member produces corresponding rotation of said first magnetic member,
d. drive means for rotating said second magnetic member so that the axis of rotation thereof is coextensive with the optical axis in the absence of angular displacement of the housing relative to the optical axis, and
e. an electrically conductive member rotatable with said first magnetic member in detached disposition with respect to said second magnetic member and including a surface traversed by the magnetic field thereof,
whereby gyroscopic precession forces produced by said first magnetic member as a result of angular displacement of the housing are counteracted by restorative precessional forces produced in said electrically conductive member by eddy currents generated therein when a relative difference in surface velocities exists between said electrically conductive member and said second magnetic member as a consequence of axial misalignment caused by such angular displacement.

3,892,468
OPTICAL SCANNER UTILIZING ORGAN ARRAYS OF OPTICAL FIBERS
Michel Albert Duguay, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 28, 1973, Ser. No. 401,635
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 B **4 Claims**

1. A passive optical scanner comprising, in combination, means for producing from a light pulse of duration T a plurality of light pulses propagating along spatially separate paths, each of said plurality being substantially iden-

tical in transverse shape to the light pulse from which it is produced,

a first array of optical fibers of different lengths with the difference in length between functionally adjacent fibers being uniform, each of said fibers being arranged so that one end thereof terminates in an input plane and the opposite end thereof terminates in an output plane for emitting each light pulse in a direction perpendicular to



said output plane, said difference in length producing a substantially uniform difference in time delay $\Delta\tau_1$ between functionally adjacent fibers so that $\Delta\tau_1 > T$, and

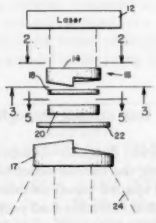
means for coupling each of said plurality of light pulses into separate ones of said fibers at said input plane so that said plurality of light pulses arrive at said output plane at different times and in different spatial locations, thereby to scan said output plane.

3,892,469

ELECTRO-OPTICAL VARIABLE FOCAL LENGTH LENS USING OPTICAL RING POLARIZER

James F. Lotspeich, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 1, 1974, Ser. No. 438,900
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **11 Claims**



1. An electrically controlled variable focal length lens system for controlling the divergence of polarized light such as the output of a laser, said lens system comprising:

a. a solid body of crystalline material having a plurality of electrodes embedded therein, said electrodes being positioned in said crystal to produce at every internal point therein a birefringence proportional only to the square of the radial distance from the center of the lens to the given point, the slow axis of said crystal being everywhere tangent to its circle of consant refringence, said electrically controlled crystal thereby being adapted to affect ring-polarized light;

b. means positioned ahead of said lens for receiving linearly-polarized light and for converting said light into ring-polarized light; and

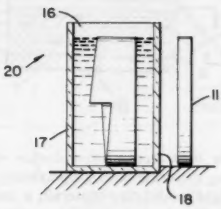
c. means to apply control voltages to said electrodes.

3,892,470

OPTICAL DEVICE FOR TRANSFORMING MONOCHROMATIC LINEARLY POLARIZED LIGHT TO RING POLARIZED LIGHT

James F. Lotspeich, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 1, 1974, Ser. No. 438,899
Int. Cl. G02b *27/28*
U.S. Cl. 350—157 **5 Claims**



1. A polarization converter for light of a predetermined wavelength comprising in combination:

a. a quarterwave plate;

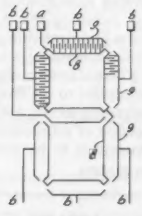
b. a disc of birefringent material, said disc having one planar surface and a second opposed ramp surface, said ramp surface being cut so that the thickness of the disc varies linearly through a range of 2π radians as a function of the angle from an arbitrary radial line at zero radians between an initial thickness b_0, and a final thickness equal to b_0 plus 2λ divided by the birefringence of the crystal where λ is the predetermined wavelength of the radiation to be transmitted through the polarization converter.

3,892,471

ELECTRODES FOR LIQUID CRYSTAL COMPONENTS

Manfred Biermann; Bernd Brauer; Wolfgang Heidborn; Bernd Monno, and Klaus Thiessen, all of Berlin, Germany, assignors to VEB Werk fur Fernsehelektronik, Berlin, Germany

Filed Nov. 2, 1973, Ser. No. 412,364
Claims priority, application Germany, Nov. 6, 1972, 166682
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 LC **13 Claims**

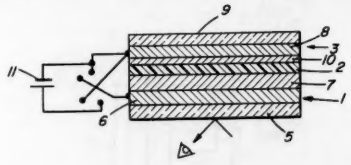


1. In a liquid crystal display device having first and second electrodes, both of the electrodes being optically transparent, and wherein a layer of a liquid crystal material is provided between the electrodes, the improvement comprising first and second spaced apart substrate support plates, the first and second electrodes being on said first and second plates, respectively, and wherein the area of one of said first and second electrodes is separated into a plurality of small partial regions of a size not discernible from a normal viewing distance of said device.

3,892,472
SELF-SUPPORTING PIGMENT LAYERS FOR ELECTROCHROMIC DISPLAY

Robert Domenico Giglia, Rye, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1973, Ser. No. 428,563
Int. Cl. G02f 1/36
U.S. Cl. 350—160 R **8 Claims**

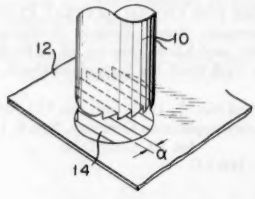


1. A varaible light transmission device which comprises light transmitting substrate having a persistent electrochromic material as a light modulating material, a counter-electrode, and a self-supporting layer comprising a pigment and an ion-conducting material in contact with said material and counter-electrode.

3,892,473
METHOD OF WRITING ADDITIONAL INFORMATION IN READ-ONLY MEMORY

Shigeru Ando; Kazunaru Tomishima, and Akira Nishikawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 15, 1973, Ser. No. 332,764
Claims priority, application Japan, Feb. 15, 1972, 47-15812
Int. Cl. G02b 27/28
U.S. Cl. 350—162 R **15 Claims**



1. A method of writing an additional bit of information in a read-only memory, including the step of superimposing, upon a phase diffraction grating defining a memory formed on a record medium of plastic material, a separate phase diffraction grating through a plastic deformation of the plastic material due to a pressure applied to the record medium, the separate phase diffraction grating having a selected one of parameters defining the direction of diffraction as determined by an additional bit of information to be written from that of the preceding diffraction grating.

3,892,474
OPTICAL WEAPON SIGHT HAVING CONTROLLED UNIVERSALLY MOVEABLE MIRROR

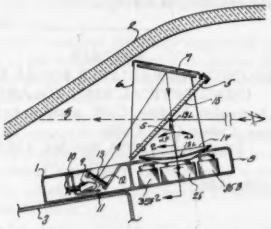
Hans Arne Ingvar Nikson, Jonkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Nov. 8, 1973, Ser. No. 413,832
Claims priority, application Sweden, Nov. 13, 1972, 14679/72
Int. Cl. G01n 21/00
U.S. Cl. 356—252 **8 Claims**

1. An optical sight device for weapon aiming, comprising a fixed frame that carries a viewing screen, means fixed on the frame for generating a sighting symbol image which is to be visible on the screen and to be used as an aiming reference, a mirror which reflects the sighting symbol image onto the screen and which is constrained to universal tilting about a pair of perpendicular coplanar tilt axes, and demand signal means for producing outputs signifying the magnitude and direction of displacement of the mirror about each of said axes that will so orient the mirror that the sighting symbol is positioned on the screen in accordance with conditions that affect aiming, said optical sight being characterized by:

A. two pairs of reversible linear motors, one pair for tilting the mirror about each of said tilt axes,
   1. each of said motors being connected between the frame and the mirror to react between them,
   2. the two motors of each pair being located
      a. substantial and equal distances to opposite sides of the intersection of the tilt axes, and
      b. on one of said axes;

B. position transducer means for producing an output that corresponds to the angular orientation of the mirror about each of said tilt axes, said position transducer means comprising
   1. an exciter element spaced to one side of the plane containing the tilt axes and located on a perpendicular



to said plane that extends through the intersection of said axes,
   2. two pairs of fixed detector elements, one pair for each of said tilt axes, the two detector elements of each pair thereof being spaced equal distances to opposite sides of the plane that contains said perpendicular and their tilt axis and being located on the plane that contains said perpendicular and the other tilt axis, and
   3. an element at said one side of the first mentioned plane, constrained to move in unison with the mirror and having portions in opposing relationship to the exciter element and normally in partial opposing relationship to all of said detector elements to vary an electrical characteristic of a circuit comprising each pair of detector elements in accordance with the orientation of the mirror; and

C. circuit means connected with said demand signal means and connected in feedback relationship with said position transducer means for producing control outputs for the linear motors that correspond in magnitude and sign with any departure of the mirror from an orientation signified by the output of the demand signal means and for feeding said control outputs to the linear motors to cause them to maintain the mirror in the last mentioned orientation.

3,892,475
LASER BEAM ADJUSTMENT APPARATUS

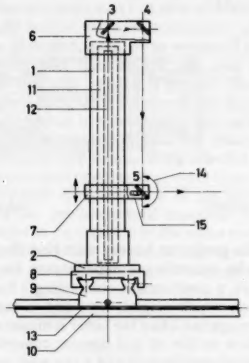
Arpad Bardocz, Munich, Germany, assignor to Physik Instrumente (PI) GmbH, Munich, Germany

Filed Sept. 5, 1973, Ser. No. 394,549

Claims priority, application Germany, Sept. 12, 1972, 2244578

Int. Cl. G01c *3/00*

U.S. Cl. 350—285 **11 Claims**



1. A laser beam adjustment apparatus, comprising:
a. base means;
b. a housing, mounted on said base means, substantially enclosing and holding a laser;
c. a first holder, mounted on one end of said housing;
d. first reflecting means, mounted on said first holder and pivotable around at least one axis of rotation, for intercepting the light beam emanating from said laser and for changing its direction of propogation;
e. second reflecting means, mounted on said first holder and pivotable around at least one axis of rotation for intercepting the light beam reflected from said first reflecting means for changing its direction of propogation;
f. a second holder, mounted on said housing;
g. third reflecting means, mounted on said second holder and pivotable around at least one axis of rotation for intercepting the light beam reflected from said second reflecting means and for changing its direction of propogation.

3,892,476
CATOPTRIC SYSTEM FOR SIMULTANEOUS CONCENTRATION OF LIGHT, LASER, AND OTHER TYPE PARAXIAL RAYS INTO BEAMS

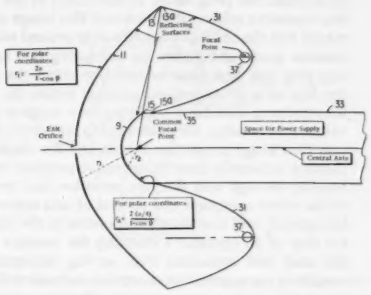
Benjamin F. Sherman, Jr., 6329 Mori St., McLean, Va. 22101

Filed Apr. 18, 1973, Ser. No. 352,466

Int. Cl. G02d *5/10*

U.S. Cl. 350—294 **8 Claims**

1. A concentrator of rays into at least one concentrated output beam, comprising:
at least two warped truncated shells, including an outer concave shell, provided with at least one inner reflecting surface and
an inner convex paraboloidal shell of a diameter, smaller than that of said outer shell provided with at least one outer reflecting surface;
means to mount said shells about the common focal point on their central axis;
the extremities of said shells being aligned on a conical surface and being defined by an imaginary cone whose surface is traversed by the limiting rays and whose vertex is at the common focal point, and whose axis coincides with the central axis,
said extremities defining the limiting rays impinging upon said reflecting surfaces;
an exit orifice in the vertex of said outer shell at the intersection with the said central axis;
the reflecting surfaces of the shells being mounted spaced from each other and substantially facing each other at angles and at distances providing at least two successive reflections from each surface of said rays impinging upon them;



the ratio of the diameter of the exit orifice to the outermost diameter of the outer shell being less than $1/\pi R^2$ where R is the ratio of the dimension of the outer shell to that of the inner shell and
at least one radiating source of paraxial rays located rearwardly from the concentrator, the vertex of the inner shell being a one way mirror.

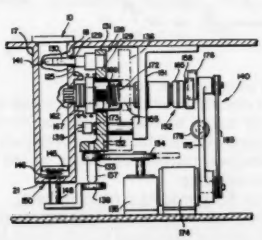
3,892,477
VIEWER PROVIDING AUTOMATIC CASSETTE EJECTION

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 227,093, Feb. 17, 1972. This application Jan. 2, 1974, Ser. No. 429,719

Int. Cl. G03b *23/02*

U.S. Cl. 352—74 **1 Claim**



1. Photographic projection apparatus for use with a cassette containing a first and second rotatably mounted spool and an elongated image-bearing film strip having its ends respectively connected to the spools and being initially substantially entirely coiled around said first spool, said apparatus comprising:
a housing having a slot formed therein, said slot being configured to have at least a major portion of the cassette inserted thereinto;
means within said housing fixedly located with respect thereto for receiving the cassette as it is inserted through said slot and locating the cassette at an operative position within said housing in alignment with said slot.
a pair of drive shafts initially positioned within said housing so as not to be contacted by the cassette as it is inserted

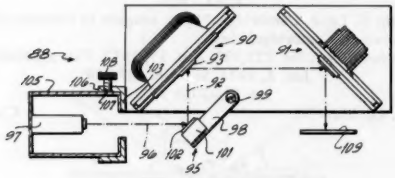
through said slot into said receiving and locating means; normally unenergized film image projection means;

means within said housing automatically responsive to the insertion of the cassette into said receiving and locating means for displacing said drive shafts from their said initial positions into respective engagement with the cassette's spools, means responsive to movement of said drive shafts into engagement with said spools; for energizing said film image projection means and for energizing said drive shaft engaged with said second cassette spool to facilitate the progressive advancement of the film strip into operative relationship with said film image projection means and the coiling of the film strip around said second cassette spool, and means for energizing said drive shaft engaging said first cassette spool to effect the return of the film strip to its original position within the cassette, for returning said drive shafts to their original positions within said housing, for deenergizing said drive shafts and said film image projection means and for displacing the cassette outwardly from its operative position within said housing through said slot, the initiation and termination of the entire operation and control of said apparatus thus being solely and completely responsive to the single manual step of an operator's inserting the cassette into said slot and said apparatus thus serving automatically to condition the cassette for repetitive such use in said apparatus prior to its automatically effecting said displacement of the cassette.

3,892,478
SOUND TO IMAGE TRANSLATOR

James G. Lampkin, Cincinnati, Ohio, assignor to Lissatronic Corporation, Cincinnati, Ohio

Filed Sept. 27, 1973, Ser. No. 401,416
Int. Cl. G03b *31/00*
U.S. Cl. 353—15 **25 Claims**



1. A visual sound system comprising:

a source of electrical audio frequency sound signals, and

an improved sound to image translator for producing a moving beam of light which, when projected on a screen, forms Lissajous patterns correlated to the sound, said translator including:

a light source for providing a beam of light,

a screen upon which a beam of light can be projected,

a first light reflector positioned to reflect said beam of light, from said source, said first reflector being pivotally supported for movement about a first pivot axis;

means responsive to electrical audio sound signals provided by said sound source for oscillating said first reflector about said first pivot axis;

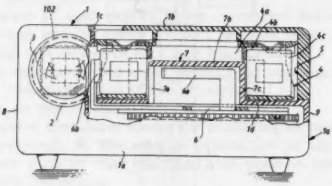
a second light reflector positioned to reflect light reflected by said first reflector, said second reflector being pivotally supported for movement about a second pivot axis arranged at a 90° angle to said first pivot axis, and

means responsive to electrical audio sound signals provided by said sound source for oscillating said second reflector about said second pivot axis, the light reflected from said second reflector, when projected on said screen, forming a moving dot of light which makes Lissajous patterns correlated to the sound from said source.

3,892,479
SLIDE PROJECTOR FOR USE WITH RING-SHAPED MAGAZINES

Alfred Winkler; Wolfgang Geisslinger, both of Munich, and Peter Ungnadner, Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 23, 1974, Ser. No. 435,855
Claims priority, application Germany, Jan. 30, 1973, 7303400[U]
Int. Cl.² G03B *23/06*
U.S. Cl. 353—117 **10 Claims**

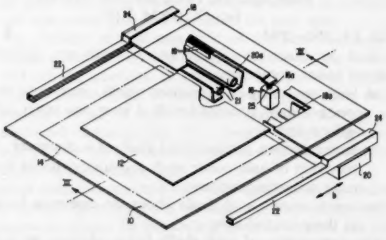


1. In a slide projector for use with ring-shaped magazines having radially extending compartments for photographic transparencies, a combination comprising a housing having a hollow section which extends into and is surrounded by a ring-shaped magazine when the latter is mounted in said housing, said hollow section of said housing comprising a substantially cylindrical upright wall and a top wall at the upper end of said cylindrical wall, and said hollow section having an opening provided in said cylindrical wall in register with a compartment of a magazine surrounding said section; and a slide changing mechanism including a portion located in the interior of said hollow section and being movable outwardly through and beyond said opening to engage and expel a photographic transparency from that compartment which registers with said opening, said outwardly movable portion of said slide changing mechanism being located in its entirety below the level of said top wall of said hollow section, whereby if the magazine is removed and then carelessly or inaccurately reinserted into the slide projector housing said top wall will prevent said outwardly movable portion of said slide changing mechanism from being hit and damaged by the magazine.

3,892,480
EXPOSURE DEVICE FOR COPYING MACHINE AND THE LIKE

Ryuzo Okada, Yamato, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1973, Ser. No. 417,719
Claims priority, application Japan, Dec. 27, 1972, 47-148094[U]
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **6 Claims**



1. In an electrostatic copying machine where an original of a first size positioned on a transparent platen is illuminated by a light source and the image thereof is reflected onto a uni-

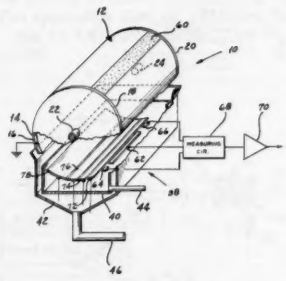
formly charged photosensitive layer to form a latent electrostatic image on the photosensitive layer, which is subsequently toner developed, the improvement of preventing toner deposition at a predetermined, marginal area of said photosensitive layer when an original of a second size smaller than said first size is copied by said machine, the predetermined marginal area corresponding to the excess area of said first size original with respect to said second size origianl, the improvement comprising a plate movably mounted with respect to said light source, said plate including an opening therein and moving means for moving said plate to: (1) a first position interposed between said light source and said transparent platen when said second size is copied, and (2) to a second position not interposed between said light source and said transparent platen when said first size original is copied, the size of the opening in said plate being such that it reduces the area illuminated by said light source to substantially that of said second size original when said plate is in said first position, the remaining light from said light source being affected by the area of said plate adjacent said opening to prevent toner deposition at said predetermined marginal area of the photosensitive layer by causing the predetermined marginal area of said photosensitive layer to be exposed in the same manner as the non-image areas of said latent electrostatic image so that when said image is toner developed, toner will deposit only on the image areas.

3,892,481

AUTOMATIC DEVELOPMENT ELECTRODE BIAS CONTROL SYSTEM

Louis F. Schaefer, Palo Alto, and Kenneth W. Gardiner, Menlo Park, both of Calif., assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Filed June 17, 1974, Ser. No. 479,659
Int. Cl. G03g 9/04
U.S. Cl. 355—10 **26 Claims**



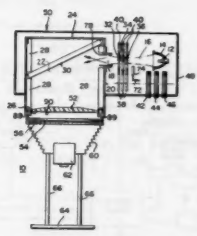
1. A system for automatically controlling the biasing potential on a developer electrode in an electrostatic copying machine including in combination, a support, a surface layer of photoconductive material on said support adapted to receive a latent electrostatic image to be developed, a developer unit for contacting developer fluid with said image to develop the same, a biasing electrode in said developer unit, a sensing electrode insulated from ground, means mounting said sensing electrode in said developer unit at a location at which developer fluid is positioned between and in contact with both said photoconductive surface and said sensing electrode to enable said sensing electrode to assume substantially the potential on said surface by conduction, and means responsive to the potential of said sensing electrode for applying a biasing potential to said biasing electrode.

3,892,482

COLOR CORRECTING ILLUMINATION SYSTEM FOR COLOR ENLARGERS AND THE LIKE

Louis L. Weisglass, New York, N.Y., assignor to Berkey Photo, Inc., New York, N.Y.

Filed Mar. 7, 1974, Ser. No. 448,912
Int. Cl. G03b 27/76
U.S. Cl. 355—35 **35 Claims**



1. An illuminating system, comprising source means for forming a beam of light, mixing chamber means for receiving the beam, filter means for coloring a part of the beam, said mixing chamber means having opaque reflective dispersing means for mixing the light in said chamber means, said chamber means having an exit window for allowing egress of the light from said chamber means, diffusion means covering the window for diffusing light as it leaves said chamber means, said diffusion means having a plurality of portions, and coloring means located in said chamber means near the window for imparting a color change to light emerging from the chamber, said coloring means being sufficiently closer to one portion of the diffusion means than another portion to impart a greater color change to the one portion than to the other portion.

3,892,483

DISTANCE WARNING DEVICE FOR VEHICLES

Helmut Säufferer, Esslingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

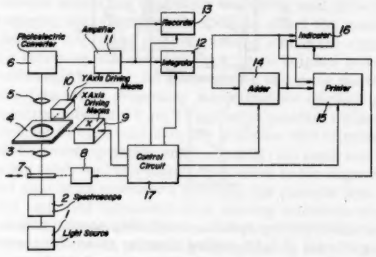
Filed Nov. 10, 1972, Ser. No. 305,318
Claims priority, application Germany, Nov. 11, 1971, 2156001
Int. Cl. G01c 3/08; G08g 1/00
U.S. Cl. 356—4 **17 Claims**

1. A distance warning installation for vehicles, especially for motor vehicles, characterized in that each vehicle is equipped with two transmitter means mounted substantially at roof height to the left and right of the vehicle for transmitting radiant energy toward the rear and with a forwardly directed receiver means disposed at the front end of the vehicle for receiving the same type of radiant energy, said transmitter means radiating each a directional beam rearwardly with predetermined inclination both with respect to the plane of the road surface as well as with respect to the vehicle longitudinal center plane and thus an area of increased radiation intensity results at a predetermined distance to the rear of the vehicle which can be detected by a receiver means of a following vehicle, and in that upon impingement of the increased radiation intensity area of the directional beams transmitted by the transmitter means of a preceding vehicle on the receiver means of a following vehicle, a control signal is automatically produced by said receiver means.

3,892,484
AUTOMATIC DRIVING AND CONTROL CIRCUIT FOR A MICROSCOPE STAGE OF A MICROPHOTOMETRIC APPARATUS

Kosaku Tsuboshima, and Ryoichi Orimo, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1973, Ser. No. 387,807
Claims priority, application Japan, Aug. 15, 1972, 47-81633
Int. Cl. G01j *3/42*; **G01m** *21/22*
U.S. Cl. 356—96 **3 Claims**



1. A scanning and integration type microphotometric apparatus comprising an optical system essentially consisting of a light source, a spectroscope, a condenser lens, a stage on which is disposed a specimen and mounted movable in given directions, a driving means for driving said stage in the given directions, an objective lens, and a photoelectric converter for receiving incident light rays penetrated through the specimen and generating a corresponding electric signal output, an amplifier for amplifying the output from said photoelectric converter, an integrator for integrating the output from said amplifier and obtaining the amount of light absorbed by the specimen, a recorder receiving the output from the output from said amplifier and recording a light absorptivity curve plotted at each light spot scanning on a record sheet, an adder adding the output from said integrator to obtain the total amount of light absorbed by the overall specimen, a printer receiving the outputs from said integrator and from said adder and printing the amount of light absorbed by the specimen and the total amount of light absorbed by the overall specimen, respectively, an indicator receiving the outputs from said integrator and from said adder and indicating the amount of light absorbed by the specimen and the total amount of light absorbed by the overall specimen, respectively, and a control circuit interconnecting said driving means, integrator, recorder, adder, printer and indicator to control all of these devices in operative relationship with each other.

3,892,485
MONITORING APPARATUS FOR MEASURING PARTICLES SUSPENDED IN LIQUID AND FOR MEASURING THE OPACITY OF THE LIQUID

Robert Bruce Merritt, Sharonville, and Norbert John Hester, Cincinnati, both of Ohio, assignors to General Electric Company, Wilmington, Mass.

Filed May 6, 1974, Ser. No. 467,286
Int. Cl. G01n *21/22*
U.S. Cl. 356—103 **8 Claims**

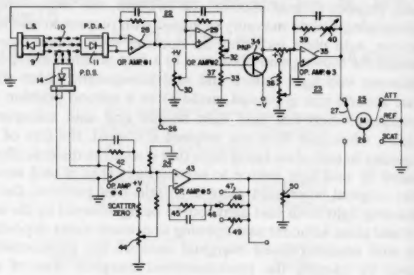
7. A monitor for indirectly measuring the opacity of a liquid comprising,

a. a body adapted for immersion in a liquid and having means defining a passage for receiving liquid to be monitored;

b. a source of radiation positioned in said body and communicating with said passage for transmitting a beam of radiant energy through said liquid;

c. radiation detection means for receiving radiant energy transmitted through said liquid;

d. means for varying the output from said source of radiation as a function of the transmission characteristics of said liquid including a control loop for varying the supply voltage to said radiation source in response to the output



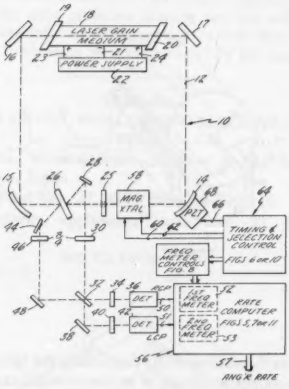
of said detection means to maintain the illumination at said detection means constant with changes in the opacity of the liquid; and

e. means to measure the supply voltage to said radiation source to provide an indication of the transmission characteristic and opacity of said liquid.

3,892,486
SEQUENTIALLY SWITCHED LASER GYRO

Carl M. Ferrar, Rockville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 23, 1973, Ser. No. 355,348
Int. Cl. H01s *3/10*
U.S. Cl. 356—106 LR **12 Claims**



1. A sequentially switched laser gyro comprising:

a closed loop optical cavity including a plurality of mirrors defining an optical path, and including selectively operable means for adjusting the length of said optical path and the commensurate isotropic cavity resonance frequency of said optical cavity and having a laser gain medium disposed in said optical path;

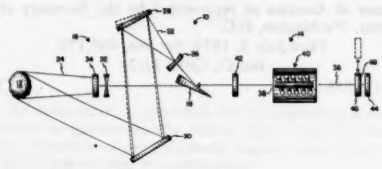
a polarization anisotropy disposed in said optical path, wherein said optical cavity sustains laser oscillations in two different substantially mutually opposite polarizations at different frequencies;

means for extracting counterclockwise waves from said cavity;
means for extracting clockwise waves from said cavity;
means for mixing the clockwise and counterclockwise waves extracted from said cavity and for separating said waves into waves of a first one of said polarizations and waves of a second one of said polarizations;
means responsive to said first polarization waves for providing first signals at a frequency proportional to the difference in frequency of the clockwise and counterclockwise waves of said first polarization;
means responsive to said second polarization waves for providing second signals at a frequency proportional to the difference in frequency of the clockwise and counterclockwise waves of said second polarization;
frequency control means including cyclically operable means for selectively operating said optical path length adjusting means thereby to adjust the length of said optical path to support waves of said first polarization during first increments of time interspersed with second increments of time, said increments of time being of equal duration, and for selectively operating said optical path length adjusting means to adjust the length of said optical path to support waves of said second polarization during said second increments of time; and
output means providing an output manifestation of angular rate of said sequentially switched laser gyro as a function of a combination of said first signals provided in response to waves of said first polarization during said first increments of time and said second signals provided in response to waves of said second polarization during said second increments of time.

3,892,487
HOLOGRAPHIC CONTOURING WITH A MULTIFREQUENCY LASER

Ralph F. Wuerker, Palo Verdes Estates, and Lee O. Heflinger, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 310,858, Nov. 30, 1972, Pat. No. 3,818,372. This application Mar. 18, 1974, Ser. No. 452,170
Int. Cl. G01b *9/02; G02b 27/00*
U.S. Cl. 356—109 **6 Claims**

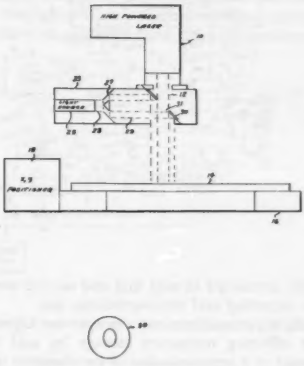


1. Holographic contouring apparatus comprising:
a multifrequency laser oscillator comprising:
an active lasing medium capable of being pumped to a population inversion which creates light emission at first and second optical frequencies; means for pumping said lasing medium to said population inversion to produce light emission at said two optical frequencies; an optical cavity containing said lasing medium including an output reflector at the front end of said cavity, a first reflector at the rear end of said cavity for selecting said first frequency, and a second reflector at the rear cavity end for selecting said second frequency; and means for causing said medium to lase at said frequencies in rapid succession comprising at least one rear end reflector movable between an active position where it reflects the laser beam and an inactive position where said beam is reflected by the other rear end reflector;
a beam splitter for splitting the output beam from said laser oscillator into a reference beam and a scene beam;
light sensitive means disposed in a predetermined plane for recording a hologram of an object;
first fixed optical means for directing said reference beam toward said light-sensitive means; and
second optical means for directing said scene beam onto the object to be recorded and thence onto said light-sensitive means, the difference in frequency of said wavelengths being such that range contours of a predetermined spacing are produced on the object.

3,892,488
LASER SITE MARKING SYSTEM

Walter R. Edmonds, Fairborn, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 22, 1974, Ser. No. 445,004
Int. Cl. G01b *11/26*
U.S. Cl. 356—153 **1 Claim**



1. In combination with a high powered laser providing a beam for cutting a work piece which is adapted to be moved relative to the laser beam path, a laser site marking system, comprising: means for providing a high intensity annular visible light beam; means surrounding the laser beam path, for directing the annular beam along a path in close proximity and substantially conforming to the outer circumference of the laser beam; said means for providing a high intensity annular visible light beam including means for providing a high intensity solid light beam and means for converting said solid light beam to an annular light beam; said means for directing the annular beam along a path substantially conforming to the outer circumference of the laser beam comprising a flat mirror having a hole therein in the shape of a 45° ellipse whereby the hole presents a circular profile to the laser beam and said high intensity annular beam.

3,892,489
DATA ACQUISITION SYSTEM

Francis E. Wdzieczkowski, Barrington, N.J., assignor to Smith-Kline Corporation, Philadelphia, Pa.

Filed Aug. 17, 1973, Ser. No. 389,113
Int. Cl. G01b *11/08*
U.S. Cl. 356—157 **5 Claims**

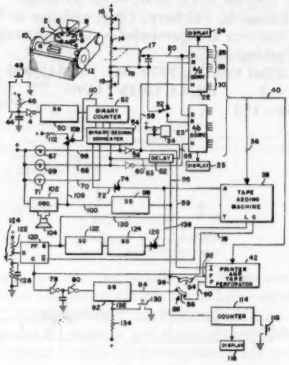
1. A data acquisition system for use in antibiotic testing by the serial measurement of zones on a bacteria culture in which growth of bacteria is inhibited alternately by standard antibiotics, and antibiotics of unknown properties, comprising:
means for successively measuring said zones, comprising means for producing an image of each of said zones, means providing a reference index, means for moving said image and said reference index relative to each

other, and means for producing an electrical signal representative of the extent of such relative movement, whereby there may be produced for each zone an electrical representation of its diameter;

first storage means, connected to said measuring means, for temporarily storing a representation of the diameter of a zone for the purpose of display of said representation;

second storage means, connected to said measuring means, for temporarily storing a representation of the diameter of a zone for the purpose of display of said representation;

means for displaying the representations stored in said first and second storage means;



means, connected to said first and second storage means, for recording said representations; and

sequencing means responsive to operator-initiated impulses for effecting temporary storage by said first storage means of a representation of the diameter of the first of a pair of successively measured zones upon the initiation of a first impulse, effecting temporary storage by said second storage means of a representation of the diameter of the second zone of said pair upon the initiation of a second impulse, and effecting recording of the stored representations by said recording means simultaneously upon the initiation of a third impulse.

3,892,490

MONITORING SYSTEM FOR COATING A SUBSTRATE

Toshio Uetsuki; Mitsuo Okajima, both of Osaka, Japan, and Yoshio Yuasa, Redondo Beach, Calif., assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 6, 1974, Ser. No. 448,683

Int. Cl. G01b *11/00*

U.S. Cl. 356—161 **19 Claims**

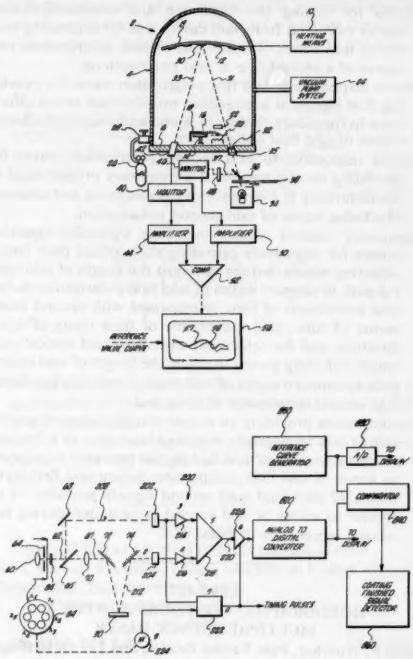
1. A monitoring system for controlling the depositing of a layer of material on a substrate comprising:

a source for producing a beam of energy having a variable wavelength across a predetermined range;

means receiving at least a portion of the beam of energy after it has contacted the material on the substrate for providing corresponding monitoring signals across the predetermined range representative of the material deposited on the substrate;

means for comparing the corresponding monitoring signals with a predetermined range of values representing a desired thickness of material; and

means for indicating when each of the monitoring signals are respectively matched with predetermined values whereby the desired thickness of material has been deposited on the substrate including a visual display screen



for displaying both the monitoring signals and the predetermined range of values.

3,892,491

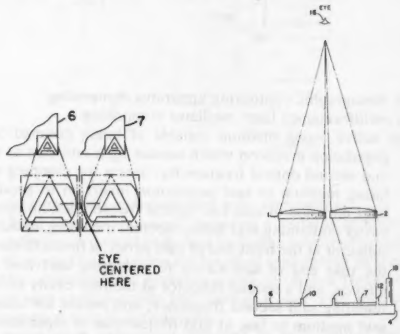
COMPARATOR, OPTICAL INSPECTION

Albert E. Kanode, Longwood, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 2, 1974, Ser. No. 485,175

Int. Cl. G01b *11/24*

U.S. Cl. 356—168 **1 Claim**



1. A method of comparing a first object with a second object with the use of first and second lenses comprising the

steps of aligning said first and second objects in predetermined spacial relationship to each other in a first plane; choosing first and second lenses which are identical in their optical and physical characteristics; aligning said first and second lenses in a second plane which is parallel to the first plane such that from a fixed point an image is formed due to the first lens which is a first portion of the first object and a second image is formed due to the second lens which is a portion of the second object which corresponds to said portion of said first object; placing said fixed point on a centerline between the two lenses and at a distance of double their focal lengths; locating said first and second planes at a distance equal to the focal length of the lenses; observing the two images alternately with a single observation means located at said fixed point; moving the plane of the first and second lenses relative to said first and second objects so as to provide for more precise focusing of the images to be viewed; moving the second lens in the second plane so as to provide precise alignment of the image of the portions of the second object with respect to the image of the portions of said first object viewed through said first lens; and moving said first and second objects simultaneously so that all corresponding portions of said first and second objects can be compared.

3,892,492
OPTOELECTRICAL APPARATUS WITH DIRECTIONAL LIGHT SOURCES FOR DETECTING REFLECTION BEHAVIOUR OF AN OBJECT

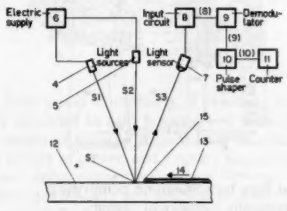
Werner Eichenberger, Zurich, Switzerland, assignor to Aktiengesellschaft Gebruder Loepfe, Wetzikon, Switzerland

Filed July 9, 1973, Ser. No. 377,824

Claims priority, application Switzerland, Oct. 16, 1972, 15184/72; Dec. 21, 1972, 18649/72

Int. Cl. G01n *21/18, 21/30*

U.S. Cl. 356—199 **3 Claims**



1. An optoelectrical apparatus for distinguishing a surface condition of predominantly diffuse light reflection from a surface condition of predominantly regular light reflection of an object, comprising, in combination:

light transmitting means including two directional light sources for generating first and second scanning light beams having different paths and intersecting at a predetermined object scanning location, means for pulsing the scanning light beams in a manner that the light pulses of each beam follow the light pulses of the other beam in alternate sequence; and

light receiving means including light sensing means responsive to light from the pulsed scanning light beams and disposed at a distance from said predetermined object scanning location is such a manner that a regularly light reflecting surface of an object arranged in said predetermined object scanning location and in a definite angular position relative to said light beams reflects light from one of said scanning light beams onto said light sensing means, whereas light from the other of said scanning light beams is reflected from such a positioned light reflecting surface in a direction where it does not impinge on the light sensing means.

3,892,493
LIGHT MEASURING PROCESS AND APPARATUS

Hans-G Pallingen; Alex Vinatzer, and Wolfgang Kapfinger, all of Brixen, Italy, assignors to Durst Ag. Fabrik Fototechnischer Apparate Bozen, Bozen, Italy

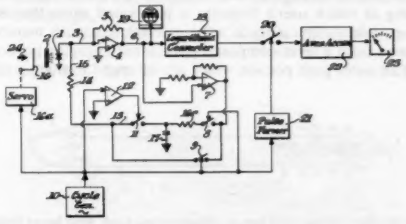
Filed June 25, 1973, Ser. No. 373,391

Claims priority, application Italy, June 24, 1972, 26164/72; May 23, 1973, 4842/73

Int. Cl. G01j *1/46*

U.S. Cl. 356—226 **17 Claims**

1. A process for measuring light with great sensitivity in graphic and photographic applications by a photoelectric transducer connected to an indicating circuit which comprises the steps of utilizing a photodiode as the photoelectric transducer, cyclically and alternately shielding the photodiode from the light and exposing it to the light, storing the signal from the indicating circuit while the photodiode is shielded from the light, amplifying the output of the photodiode in the indicating circuit, discharging the stored signal into the indicating circuit before it is amplified simultaneous with generation of the light measuring signal while the photodiode is exposed to the light whereby the error portion of the light measuring signal is cancelled, and the error portion of the



signal resulting from changes in amplification is also cancelled.

3,892,494
DETECTION OF OPTICAL MICRO-DEFECTS WITH FOCUSED RETROREFLECTED SCANNING BEAM

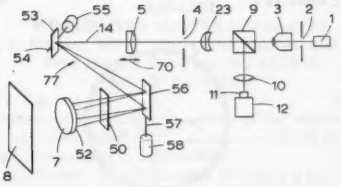
Lionel R. Baker, Orpington; Anthony J. Kirkham, Bromley; Stanley Martin, Catford; Daniel R. Lobb, Farnborough, and Christopher P. Rourke, Petts Wood, all of England, assignors to Sira Institute, Chislehurst, Great Britain

Filed July 23, 1973, Ser. No. 381,457

Claims priority, application United Kingdom, July 26, 1972, 34851/72; Dec. 16, 1972, 58217/72; Mar. 8, 1973, 11386/73

Int. Cl. G01n *21/16, 21/32;* **G01j** *1/00*

U.S. Cl. 356—239 **29 Claims**



7. An apparatus for inspecting an optical component to detect scratches, sleeks and like micro-defects therein comprising: (a) means for supporting the optical component, (b) a light source, (c) means for producing an incident beam of light focussed on part of the component when so supported, (d) means for relatively moving the beam and the component to scan successive parts of the component, (e) retroreflective means for retroreflecting light derived from the beam which has been influenced by the component so that the light is

retroreflected in the form of a cone of small angle whose axis passes back through the same part of the optical component, (f) means for collecting and separating the retroreflected light from the incident light beam, and (g) photo-electric means to derive an electric signal in dependence on the separated retroreflected light.

3,892,495

PUSH TYPE MECHANICAL PENCIL

Takeo Naruse, Koshigaya; Junichi Hashimoto, and Hideaki Oikawa, both of Tokyo, all of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1974, Ser. No. 524,673

Claims priority, application Germany, Mar. 2, 1973, 2310573

Int. Cl. B43k *21/16, 21/22*

U.S. Cl. 401—65 **8 Claims**

1. In a push type mechanical pencil comprising an outer casing; an inner casing having at its fore end a lead gripping chuck means and also formed with a lead passage communicated with said chuck means and a spare lead housing tube; and a spring means adapted to press said inner casing rearwardly along its axis, wherein said push type mechanical pencil further comprises a hole formed at a part of said outer casing at which user's fingertip is positioned when the user grasps said outer casing in writing position, a push member formed from a lever composed of an inner engaging portion, and an outer push portion which are arranged forming a certain angle relative said inner engaging portion, said lever being pivoted to the outer casing through said hole at its angled portion, said inner engaging portion of said push member having forked portions striding over said inner casing and being cooperable with an enlarged portion of said inner casing, whereby when the user pushes said outer push portion of said push member downwardly, said inner engaging portion of said push member pushes said inner casing to move forwardly against the resisting force of said spring, thereby to push out the lead into a writing position.

3,892,496

VIBRATING ROLLER

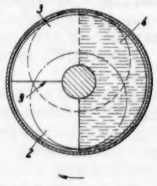
Isidoro Lebrero Martinez, Avda. Fco. Caballero, 23, Zaragoza, Spain

Filed May 3, 1974, Ser. No. 466,901

Claims priority, application Spain, May 3, 1973, 414348

Int. Cl. E01c *19/28*

U.S. Cl. 404—117 **6 Claims**



1. In a vibrating roller device provided with a rotatable shaft having an eccentric mass mounted therearound, and wherein, in each of the possible directions of said shaft, the centrifugal force can be selectively adjusted by automatically adjusting said eccentric mass; said device further including a damping means; the improvement wherein:

said eccentric mass comprises:

a pair of outer masses defining therebetween a chamber;

an inner mass positioned in a portion of said chamber;

the remainder of said chamber defining a liquid receiving container;

one of said inner mass or said pair of outer masses being rigidly fixed to said shaft, and the other being idly mounted on said shaft; and

said inner mass and said pair of outer masses being relatively arranged such that, upon a reversal of direction of rotation of said shaft, the respective centers of gravity thereof take distinct positions, and the centrifugal forces thus generated attain respective predetermined levels; and

said damping means comprises liquid filling said liquid receiving container.

3,892,497

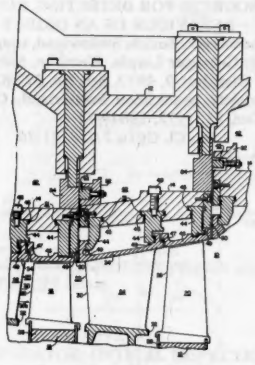
AXIAL FLOW TURBINE STATIONARY BLADE AND BLADE RING LOCKING ARRANGEMENT

Richard P. Gunderlock, Prospect Park, and Ted H. Knutzen, Rutledge, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 14, 1974, Ser. No. 469,928

Int. Cl. F01d *25/24*

U.S. Cl. 415—134 **6 Claims**



1. An axial flow turbomachine comprising:

an outer generally cylindrical casing;

a generally coaxial inner casing, said inner casing and said outer casing generally defining a plenum chamber therebetween;

an annular array of stationary blades disposed within said inner casing said stationary blades having an outer shroud portion;

a rotor having an array of rotatable blades on its periphery, said rotatable blades being mounted coaxial and adjacent said stationary blades;

an array of arcuate blade ring segments disposed radially outwardly of said rotatable blades;

said array of stationary blades comprising arcuate integral vane segments thereof;

said stationary blades being supported from said inner casing by arcuate support segments disposed on the upstream portions and intermediate portions, of said inner casing, all of said arcuate support segments and said innner casing having a track and channel interlock means therebetween, said arcuate support segments and said outer shroud portion of said stationary integral vane segments and said blade rings having a track and channel interlock means therebetween, the downstream edge of said blade rings supported by an array of arcuate support segments, each arcuate support segment having means to fixedly attach at least one point of its radially outer periphery to the inner casing to permit free circumferential

expansion and contraction of said arcuate support segments;

said inner and outer casings being separable longitudinal into generally upper and lower halves;

said vane segments and blade rings being separable into generally equally segmented arcuate semi-annular arrays, each semi-annular array having one of said arcuate support segments at each respective end thereof, said arcuate support segments at each end of each semi-annular array being fixedly attached to said inner casing by a locking plate.

3,892,498

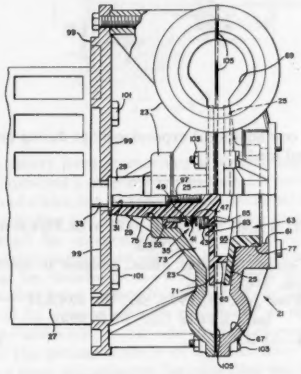
FLUID PUMP WITH ROTARY SEAL ASSEMBLY

Roy A. Jacuzzi, Moraga, and Peter L. Kosta, Lafayette, both of Calif., assignors to Jacuzzi Research, Inc., Berkeley, Calif.

Filed Nov. 28, 1973, Ser. No. 419,719

Int. Cl.² F04D *29/08*

U.S. Cl. 415—170 A **6 Claims**



1. A fluid pump comprising: a housing, impeller means rotatably mounted in said housing and including drive connecting means adapted to connect said impeller means to an external source of power, and a rotary seal assembly mounted about said drive connecting means between said impeller means and said housing and adapted to effect sealing against the passage of fluid from said housing proximate said drive connecting means, said rotary seal assembly further including means for anchoring said rotary seal assembly to positively preclude rotation of said impeller means with respect to said rotary seal assembly upon acceleration of said impeller means whereby wear between said rotary seal assembly and said impeller means as a result of relative slippage or rotation is essentially eliminated.

3,892,499

MULTISTAGE TURBOCOMPRESSOR HAVING AN INTERMEDIATE COOLER

Rene Strub, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed July 12, 1973, Ser. No. 378,428

Claims priority, application Switzerland, July 13, 1972, 10517/72

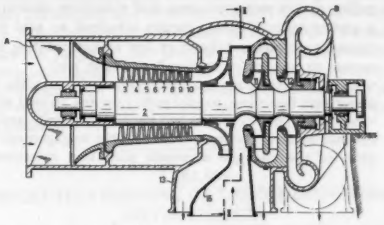
Int. Cl. F01d *5/08*

U.S. Cl. 415—179 **11 Claims**

1. In a multistage turbocompressor having a compressor housing including an inlet and an outlet and an intermediate cooler outside said housing;

a casing duct connected between said housing and said cooler downstream of said inlet for passing a flow of heated compressed gas from said housing to said cooler for cooling therein, and

a central duct enclosed within said casing duct and connected between said cooler and said housing upstream of said outlet for passing the flow of cooled compressed gas



from said cooler to said housing for passage out of said outlet.

3,892,500

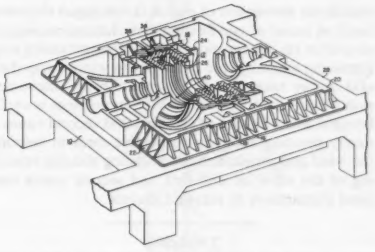
ADJUSTABLE AXIAL POSITIONING DEVICE

Lewis J. Miller, Wallingford, and William H. Coleman, Broomall, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed July 10, 1974, Ser. No. 487,348

Int. Cl. F04d *29/40*

U.S. Cl. 415—219 R **8 Claims**



1. A casing for an axial flow turbine apparatus comprising:

an inner cylinder,

an outer cylinder surrounding and mating with said inner cylinder, and,

means for positioning said inner cylinder with respect to said outer cylinder, said positioning means being disposed within said inner cylinder, said positioning means being adjustable after said inner cylinder is mated with said outer cylinder.

3,892,501

WIND-DRIVEN MOTIVE APPARATUS

Edwin K. Hillman, 907 W. Desert Cove, Phoenix, Ariz. 85029

Filed Jan. 23, 1974, Ser. No. 435,876

Int. Cl.² F03D *3/02*

U.S. Cl. 416—65 **10 Claims**

1. Apparatus for utilizing the force of the wind to induce rotational movement of at least one power takeoff pulley, said apparatus comprising in combination:

a. a framework, said framework including a pair of masts and stanchion means;

b. pivot means for orienting said framework into the eye of the wind;

c. a first vane mounted upon one of said masts, said first vane being pivotable about said one mast when said first vane extends transverse to the wind and slidable lateral to the longitudinal axis of said one mast when said first vane is essentially in alignment with the wind;

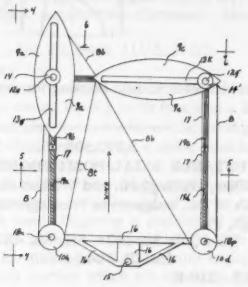
d. a second vane mounted upon another of said masts, said second vane being pivotable about said other mast when said second vane extends transverse to the wind and

slidable lateral to the longitudinal axis of said other mast when said second vane is essentially in alignment with the wind;

e. pulley means mounted upon said stanchion means;

f. a power takeoff pulley means attached to said pulley means, said power takeoff pulley means rotating in response to rotation of said pulley means; and

g. a loop of flexible material engaging and extending from about said first vane, to said pulley means, to said second vane, to said pulley means and back to said first vane, said flexible material being in non-slidable engagement with each of the engaged elements such that rotational or



rectilinear movement of one of the engaged elements will result in travel of said flexible material and corresponding pivotal or rectilinear movement of the remaining engaged elements; whereby, the force of the wind is translated to said power takeoff pulley means through movement of said flexible material where such movement is cyclically brought about by one of said first and second vanes alternately pivoting about its respective mast in response to the wind and simultaneously inducing slidable repositioning of the other of said first and second vanes into the wind preparatory to rotation thereof.

3,892,502

CONTROL OF EXPANSION RATIO IN ROTARY MOTORS

Edward Pritchard, 339 Balaclava Rd., Caulfield, Victoria, Australia

Continuation-in-part of Ser. No. 162,237, July 13, 1971, abandoned, which is a continuation of Ser. No. 8 ;9,271, Oct. 24, 1969, abandoned. This application May 10, 1973, Ser. No. 359,023

Claims priority, application Australia, Oct. 28, 1968, 45464/68

Int. Cl. F01c *21/00;* **F04c** *29/00*

U.S. Cl. 418—15 **7 Claims**

1. In a rotary motor driven by expansion of a compressible working fluid introduced from a working fluid inlet supply line under pressure through an inlet port of the motor into a first expansion stage, said motor having at least one additional expansion stage between said first expansion stage and an outlet port spaced from said inlet port, the improvement in a motor control system associated therewith comprising:

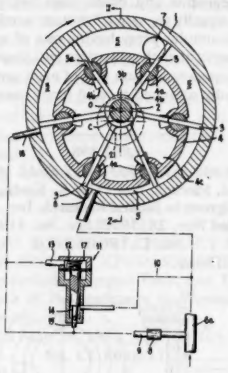
a bleed passage means connected to said working fluid inlet supply line for continuously transmitting additional working fluid to said at least one additional expansion stage thereby increasing the amount of working fluid within the motor to do work;

said bleed passage means having therein a restriction having a predeterminable minimum fluid passage control area;

a pressure sensitive valve in a passage connected in parallel to said restriction, between said at least one expansion stage and said working fluid inlet supply line;

said restriction forming means for automatically passing to said at least one additional expansion stage a continuous flow of working fluid in predetermined amounts effective at low motor speeds; and

said pressure sensitive valve providing means for automatically passing increased amounts of working fluid to said



at least one additional expansion stage during periods of abnormal load.

3,892,503

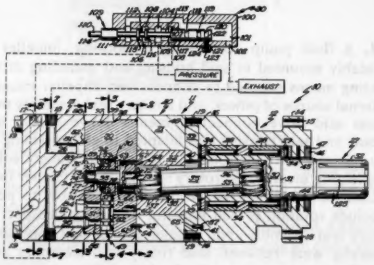
APPARATUS AND METHOD FOR MULTIPLE MODE MOTOR

Ronald K. Getman, Hopkins, Minn., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Jan. 23, 1974, Ser. No. 435,831

Int. Cl. F01c *1/02;* **F03c** *3/00*

U.S. Cl. 418—61 B **9 Claims**



1. In a fluid motor, of the type which accepts fluid from a pressure source, converts the fluid energy into mechanical energy and then exhausts the fluid, having:

a Gerotor unit capable of relative rotational and orbital movement to define a plurality of expanding and contracting chambers;

a like plurality of pressure ports, wherein each said pressure port is associated with a single chamber;

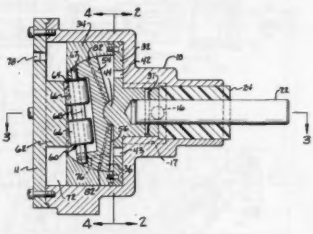
a like plurality of exhaust ports, wherein each said exhaust port is associated with a single chamber and is in communication with exhaust; and

valve means for placing said pressure ports in communication with their respective associated chambers when said associated chambers are expanding and for placing said exhaust ports in communication with their respective associated chambers when said associated chambers are contracting;

the improvement comprising:

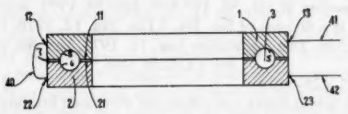
selector means for selectively connecting predetermined ones of said pressure ports to the pressure source or to exhaust.

3,892,504
ROTARY PUMP
Robert D. Wehr, deceased, late of Tarpon Springs, Fla., and by Elsie Deshely Wehr, executrix, Tarpon Springs, Fla., assignors to Elsie Deshely Wehr, Tarpon Springs, Fla.
Filed Jan. 3, 1974, Ser. No. 430,500
Int. Cl.[2] F04C 9/00
U.S. Cl. 418—68 17 Claims



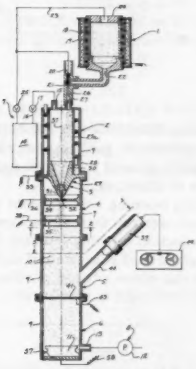
1. A rotary pump comprising a housing having inlet and outlet ports and a chamber having an inner surface at least a portion of which has an arcuate cross-sectional shape; a drive shaft extending out of the housing; a rotor plate fixed to the drive shaft for rotation therewith and having ports which alternately communicate with the inlet and outlet ports in the housing; the arcuate cross-sectional shaped inner surface of the chamber being formed by a rotor body in the chamber and mounted for rotation with the rotor plate; an impeller in said chamber and having a rear side which is shaped complementary to the arcuate surface of the chamber; said impeller having a front side adjacent the rotor plate and having a driving connection therewith; said front side of the impeller having two faces which diverge away from the driving connection; cooperating means at the rear of the impeller to effect an oscillating movement of the impeller as it is rotated thereby moving said faces alternately toward and away from the rotor plate to provide a pumping action; and a portion of said cooperating means being on the impeller and another portion being on the housing.

3,892,505
MEANS FOR HEATING A MOLD
Jacques Doucherain, and Bernard Baumann, both of Paris, France, assignors to Cebal GP and Societe de Traitements Electrolytiques et Electrothermiques, France
Continuation of Ser. No. 232,956, Sept. 17, 1971, abandoned, which is a continuation of Ser. No. 842,132, July 16, 1969, abandoned. This application June 4, 1974, Ser. No. 476,307
Claims priority, application France, June 23, 1968, 68.160223
Int. Cl. B29h 5/02
U.S. Cl. 425—41 6 Claims



1. A heated mold for heating a material comprising at least two electrically conductive mold elements, each of said elements having a face substantially corresponding to the face of the other element, each of said faces having a recess therein defining a closed molding cavity when said elements are positioned in face-to-face relation, and each of said faces being electrically insulated from the other, conducting means electrically connecting said elements together and means supplying a radio-frequency alternating current with a frequency within the range of 100 kHz to 10 MHz to said elements causing said current to flow from one of said elements to the other through said conducting means generating heat on the faces of said elements adjacent said cavity thereby heating said material.

3,892,506
PROJECTION FORMING OF THREE-DIMENSIONAL METAL OBJECTS
Fred M. Dann, 130 Cliff, Sun Prairie, Wis. 53590, and James Reigel, 4725 Cottage Grove Rd., Madison, Wis. 53716
Filed June 28, 1973, Ser. No. 374,307
Int. Cl. B29c 11/00
U.S. Cl. 425—78 16 Claims



1. An apparatus for projection forming of a threedimensional object from metallic particles such as metal powder and the like, comprising, in combination:
a. means to form a moving stream of the said particles,
b. means to heat said stream of particles to a coherent bonding state,
c. planular image generating means disposed and operative to continuously impose a variable two-dimensional image on said stream of heated particles,
d. and a target disposed downstream from said planular image generating means for impingement thereon by said particles and build-up thereon of a three-dimensional object corresponding in shape to the image continuously imposed on said particles by the planular image generating means.

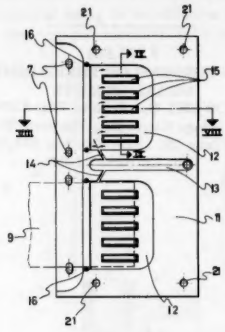
3,892,507
METHOD AND MEANS FOR MOLDING A FASTENER ONTO A PIECE OF FABRIC
Maria Cruz Hernandez Garcia, Madrid, Spain, assignor to Cinva S.A., Madrid, Spain
Continuation-in-part of Ser. No. 183,480, Sept. 14, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,504
Claims priority, application Spain, Dec. 28, 1970, 161985.
Int. Cl. B29d 31/00
U.S. Cl. 425—129 2 Claims

1. An apparatus for molding a fastener onto a piece of fabric, said apparatus comprising:

a mold adapted to surround that portion of a piece of fabric to which the fastener is to be attached;

said mold having therein a cavity of a shape to form the desired fastener, said portion of said piece of fabric extending into said cavity along an edge thereof;

means within said cavity for centering said portion of fabric between opposite walls of said mold;



means for guiding the position of the edges of said piece of fabric, said means for guiding comprising a plurality of truncated pivots situated to contact and guide said edges of said piece of fabric; and

a single injection opening entering into said cavity for injecting molten material therein for forming said fastener, said single injection opening entering into said cavity at an acute angle to said edge thereof and in a plane corresponding to the plane of said portion of said piece of fabric when positioned in said cavity.

3,892,508

CASTING MOULD HAVING A VENTILATION DUCT

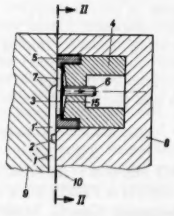
Fritz Hodler, 28 Ave. de Collonge, Territet, Switzerland

Filed June 25, 1973, Ser. No. 373,141

Claims priority, application Switzerland, Sept. 29, 1972, 14260/72

Int. Cl. B29c *1/00*; B22d *17/14*

U.S. Cl. 425—135 **10 Claims**



1. A casting mold having a ventilation duct, a ventilation valve in the duct, a recess in communication with the mold cavity, a pressure-sensitive membrane forming part of the wall of the recess, and actuating means responsive to flexion of the membrane, under the influence of the pressure of casting material entering the recess, to initiate closure of the valve.

3,892,509

INJECTION MOLDING MACHINE HAVING SEPARATE MOLD MOVING AND MOLD CLOSURE FORCE APPLYING MEANS WHICH ARE RESETTABLE

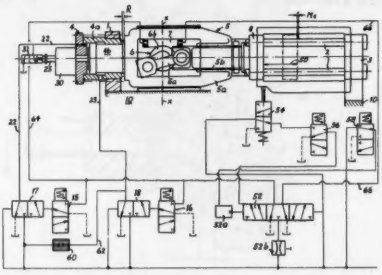
Edwin Ruegg, Netstal, Switzerland, assignor to Maschinenfabrik und Giesserei Netstal AG., Switzerland

Filed Oct. 31, 1973, Ser. No. 411,205

Claims priority, application Switzerland, May 23, 1973, 7307/73

Int. Cl. B29f *1/06*

U.S. Cl. 425—136 **3 Claims**



1. An injection molding machine, comprising a fixed mold clamping plate, a movable mold clamping plate movable toward and away from said fixed mold clamping plate, first guide means for guiding said movable mold clamping plate for backward and forward movement in respect to said fixed mold clamping plate, a movable guide housing having one end connected to said movable mold clamping plate, a crosshead piston being movable on said guide housing and having an end connected to said movable mold clamping plate for effecting closing and opening movement thereof, a hydraulic motor including a cylinder and a drive piston movable in said cylinder and being connected to said guide housing for displacing said guide housing with said movable clamping plate to apply a closing force to said mold, a rotary drive assembly within said guide housing including a rotatable crank shaft connected to said crosshead piston to displace said piston and said movable clamping plate in closing and opening directions, a fixed power member axially arranged in respect to said drive piston and spring means acting between said fixed power member and said drive piston and concentrically arranged in respect to said drive piston and acting on said piston along the axis thereof to restore it to a neutral position after the closing force is applied to the movable mold clamping plate by said drive piston, said drive piston being provided with a hollow portion having a bushing therein, said power member extending through said bushing and through said cylinder and terminating in a collar located in spaced relationship to the interior of said bushing, said spring means comprising a spring pack located between said collar and said bushing.

3,892,510

TOY EXTRUDER

Harry Meth, and Allen A. Greenberg, both of Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.

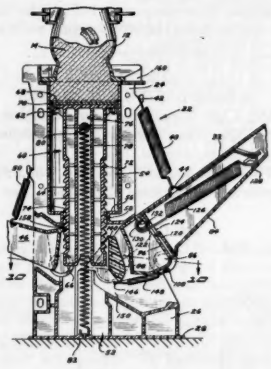
Continuation of Ser. No. 167,860, July 30, 1971, abandoned, which is a division of Ser. No. 2,126, Jan. 12, 1970, Pat. No. 3,685,936. This application Aug. 16, 1973, Ser. No. 388,879

Int. Cl. B29f *1/06*

U.S. Cl. 425—173 **4 Claims**

1. A toy extruder comprising an elongated housing having first and second ends and a bore open at said first end, for receiving varying amounts of a material to be extruded, said bore extending from said first end toward said second end, said opening in said first end permitting the material to be

readily introduced into said bore, a movable plunger positioned within said bore, the cross-sectional size and shape of said plunger being substantially the same as that of the bore, means for biasing said plunger toward the second end of said housing, a handle member pivotally connected to said housing, a portion of said handle member adapted to engage a portion of the plunger and cause it to move in a first direction toward the first end of said housing in response to pivotal



movement of said handle from a starting position in a first direction, releasable means for preventing said plunger from moving toward the second end of the housing as the handle member is pivoted in a second direction and as said handle is positioned in said starting position, a hollow mold having a prescribed shape and configuration, and means proximate the first end of the housing for detachably securing said hollow mold to said housing in such a manner that the interior of said mold communicates with the bore in the housing.

3,892,511

EXTRUSION ORIFICE PLATE FOR EXTRUDING POTATO MIX

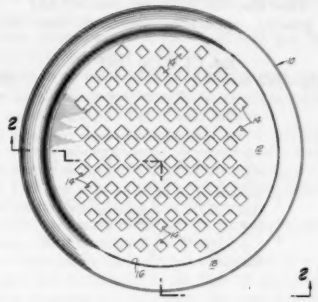
David A. Farrant, Northridge, and Francis A. Dedona, Sherman Oaks, both of Calif., assignors to The Scionics Corporation, Culver City, Calif.

Continuation of Ser. No. 147,816, May 28, 1971, abandoned. This application Sept. 26, 1973, Ser. No. 400,851

Int. Cl. A21c *11/16*

U.S. Cl. 425—464 **2 Claims**

1. In apparatus for producing french fries from a potato dough in which the potato dough is extruded under pressure through apertured portions of an extrusion type die means wherein the improvement comprises, (In an arrangement for extruding potato dough for use in the process of making french fries, shoestring potatoes and the like,) said die means being a plate of uniform thickness having a series of extrusion apertured portions punched therethrough by conventional punching means, the thickness of the plate and correspondigly the length of each of said apertured portions being no greater than approximately one-eighth of an inch and not less than approximately 0.109 of an inch, each of said apertured portions (each having a lenght equal to the thickness of said plate and each apertured portion) being of substantially uniform cross-sectional area and shape throughout its length, and said plate being positioned in said apparatus so that the surface thereof through which the material punched therefrom exited



during a punching operation is the surface for entrance of said dough to be extruded through said apertured portions.

3,892,512

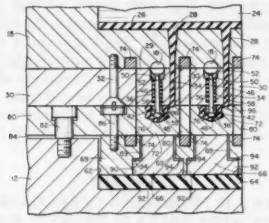
TRANSFER MOLDING APPARATUS WITH RESILIENT PAD TO DISTRIBUTE MOLDING PRESSURE

Alan V. Diehl, 11144 Wystone Ave., Northridge, Calif. 91324

Filed Sept. 13, 1973, Ser. No. 396,698

Int. Cl. B29h *3/12*

U.S. Cl. 425—251 **10 Claims**



1. Molding apparatus for producing a molded material comprising:

upper and lower mold sections movable relative to one another between a together position and a spaced apart position, each of said mold sections having a cavity portion which forms a closed cavity when said mold sections are in said together position, said cavity portion of said lower mold section being formed within a lower cavity insert, said insert being movable in respect to said lower mold section, said insert being movable toward said upper mold section;

an enlarged chamber formed within said lower mold section;

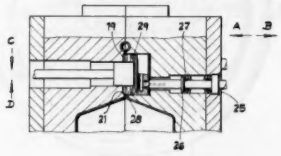
a biasing means taking the form of a pad of resilient material connected to said insert located within said enlarged chamber for exerting a force against said insert tending to move such toward said upper mold section; and

an intermediate block interconnecting said insert and said pad, said intermediate block being movable relative to said lower mold section, whereby the cooperation between said intermediate block and said insert functions to maintain even firm contact between said insert and said upper mold section.

3,892,513
APPARATUS FOR MAKING BLOW-MOLDED CONTAINERS HAVING HANDLES

Gottfried Mehnert, Berlin, and Klaus-Dieter Koetke, Luder, Orfsteil, Reinstorf, both of Germany, assignors to Bekum Maschinenfabriken GmbH, Berlin, Germany

Filed Dec. 22, 1972, Ser. No. 317,651
Claims priority, application Germany, Dec. 24, 1971, 7148683
Int. Cl. B29c *1/00*
U.S. Cl. 425—302 B 10 Claims

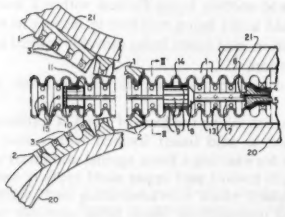


1. In an apparatus for making blow-molded containers having handles, a combination comprising mold means including two mold sections for making a blow-molded synthetic plastic container; and handle-forming means comprising a rigid first surface in one of said mold sections and having the outline corresponding to the center opening of a generally annular handle to be formed, a first component in the other of said mold sections for resilient guided movement toward and away from said first surface and having a second surface of predetermined dimension, said first and said second surface being surrounded by cutting means cooperating with each other for forming a web-shaped severed flashing in the center opening of the handle to be formed, and a second component within the outline of said first surface having a third surface of a dimension smaller than said second surface and movable relative to said first and to said second surface for squeezing bending and thereby withdrawing the severed flashing from the handle; said first and said third surface together defining a first recess in said one of said mold sections while said second surface bounds a second recess in said other of said mold sections, said recesses delimiting a space surrounded by said cutting means for the flashing of the opening to be produced.

3,892,514
APPARATUS FOR PRODUCING CORRUGATED PLASTIC PIPE WITH HOLES IN THE PIPE WALL

Erik Gustav Wendel Nordström, Box 84, 84020 Ange, Sweden

Filed June 12, 1973, Ser. No. 369,247
Claims priority, application Sweden, June 13, 1972, 7738/72
Int. Cl. B29d *23/18*
U.S. Cl. 425—308 6 Claims



1. Apparatus for producing corrugated plastic pipe having a plurality of holes through the pipe wall spaced along the length of the pipe comprising:

an extrusion nozzle;

a pair of complementary mold jaws mounted in guide tracks for movement together at the nozzle and for separation at a downstream station with each mold jaw having aligned ridges separated by grooves to form corrugated pipe walls;

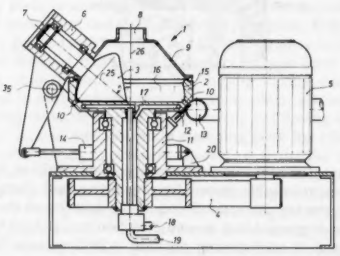
a plurality of radially inwardly directed projections on the inside surfaces of the mold ridges, the radial length of the projections being relatively short and the shape of the sidewalls of the projections being such that by separation of the mold jaws the projections are withdrawn from inwardly directed bubbles formed on the interior pipe walls; and

cutting means located inside the formed pipe and downstream of said nozzle and beyond where the projections are withdrawn from the formed bubbles for cutting off the bubbles so that holes through the pipe walls are obtained.

3,892,515
GRANULATING APPARATUS

Horst Bremer, Lage, Lippe, Germany, assignor to Gunther Papenmeier KG, Maschinen-und Apparatebau, Detmold, Germany

Filed Apr. 12, 1974, Ser. No. 460,556
Claims priority, application Germany, Apr. 26, 1973, 2321204
Int. Cl. B29b *1/03*
U.S. Cl. 425—314 15 Claims



1. Granulating apparatus consisting of a rotatable container formed with a multiplicity of shaped holes through which the material to be granulated is forced by means of at least one rotatable pressure means, a separating device comprising at least one blade adjacent the outside wall of the container for separating the material leaving the shaped holes characterized by: said container being disposed for rotation about a substantially vertical axis, is pot shaped and open at the upper end; a bearing means disposed outside said container for journalling said rotatable pressure means in overhung manner; a rocking device engaging and mounting said bearing means for selective rocking of said pressure means so it can be rocked and pressed to rotate against the inside base portion of said container; and the container axis and the axis of said pressure means or their projections intersecting one another.

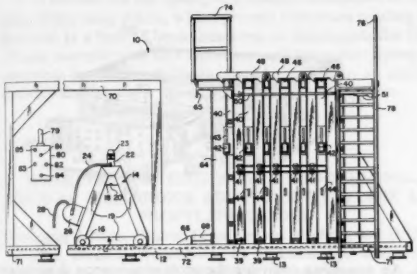
3,892,516
BATTERY MOLDING APPARATUS WITH TROLLEY TRANSPORTING MEANS

John P. McGrew; Larry W. Foster; John David Katzer, all of Franklin, Tenn.; Ian S. Wilson, Windsor, England, assignor Span-Deck, Inc., Franklin, Tenn.

Filed Mar. 2, 1973, Ser. No. 337,430
Int. Cl. B28b *7/26*
U.S. Cl. 425—443 15 Claims

1. A battery molding apparatus for simultaneously molding a plurality of concrete slabs or panels including a frame, a plurality of mold plates movably supported within said frame and arranged in spaced, face-to-face relation and having base

channels and side plates therebetween, said mold plates being movable towards and away from each other along the longitudinal axis of the apparatus, means to position said mold plates relative to each other in spaced relation to thereby define with said base channels and end plates upward opening mold cavities therebetween adapted to receive an admixture of concrete prior to hardening, means for displacing said mold plates along the longitudinal axis of said apparatus, said mold plates each having a first set of horizontally extending ears, said



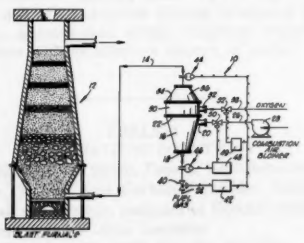
second set being positioned below said first set, said means for displacing said mold plates comprising a first and a second trolley movable along opposite sides of said mold plates and parallel to said longitudinal axis, each said trolley including hydraulic jack means supported thereto and having means for engaging one of said first set of ears to lift the corresponding mole plate upon actuation of the hydraulic jack means and means on said trolley cooperating with said second set of ears for inhibiting non-vertical motion of the lifted mold plate.

3,892,517

APPARTUS FOR GENERATING A HEATED OXYGEN ENRICHED GAS STREAM

Harold O. Ebeling, and Russell D. Smith, both of Oklahoma City, Okla., assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.

Division of Ser. No. 299,083, Oct. 19, 1972. This application June 1, 1973, Ser. No. 366,088
Int. Cl. F23n
U.S. Cl. 431—90 **2 Claims**



1. Apparatus for generating a heated oxygen enriched gas stream under superatmospheric pressure for use in blast furnaces and the like which comprises:

a high intensity combustion burner having a fuel gas inlet, a combustion air inlet, a chamber wherein fuel gas and combustion air are mixed and the mixture is combusted to produce combustion gases essentially free of flame and an outlet for discharging said combustion gases;

a mixing chamber having an inlet for receiving combustion gases, an inlet for receiving a stream of oxygen and an oxygen enriched combustion gas outlet, the combustion gases inlet of said mixing chamber being connected to said combustion gases outlet of said high intensity combustion burner so that all of the combustion gases produced by said high intensity burner are caused to flow into said mixing chamber;

a conduit connected to a source of fuel gas and to said burner fuel gas inlet;

a combustion air blower for generating a stream of combustion air under superatmospheric pressure connected to the combustion air inlet of said burner;

means attached to said combustion air blower for controlling the rate of combustion air introduced to said combustion burner in response to the flow of fuel gas supplied to said fuel gas inlet so that a substantially stoichiometric combustion air-fuel gas mixture results;

a conduit connected to a source of oxygen and to said mixing chamber oxygen inlet; and

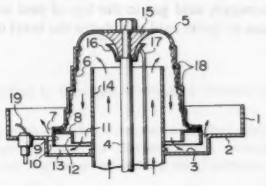
means disposed in said conduit connected to a source of oxygen and responsive to the flow of gases leaving said mixing chamber for controlling the rate of oxygen introduced to said mixing chamber so that the combustion gases produced by said apparatus contain a desired concentration of oxygen.

3,892,518

LIQUID FUEL BURNER FOR BURNING LIQUID FUEL IN GASIFIED FORM

Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1974, Ser. No. 499,027
Claims priority, application Japan, Nov. 26, 1973, 48-132367; Apr. 20, 1974, 49-44727; Apr. 20, 1974, 49-44728; Nov. 26, 1973, 48-135872[U]; Apr. 11, 1974, 49-41384[U]
Int. Cl. F23d *11/04*
U.S. Cl. 431—168 **4 Claims**



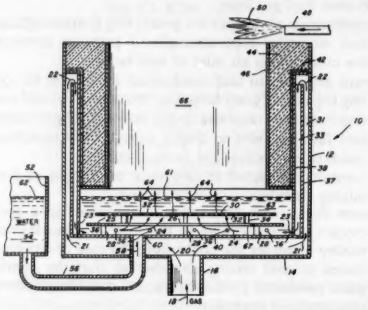
1. A liquid fuel burner for burning liquid fuel in gasified form comprising a main body formed with a recess in its bottom wall, a fuel gasifying member rotatably disposed in said main body, a gasified fuel-air mixing member mounted at the open end portion of said fuel gasifying member as a unit therewith, a scattering gap defined between said fuel gasifying member and said gasified fuel-air mixing member, said gasified fuel-air mixing member being inserted in said recess such that a gasified fuel blowing passageway is defined between said gasified fuel-air mixing member and said recess and a gasified fuel-air mixture storing chamber is formed by said recess and said gasified fuel-air mixing member, and an air supply duct having a forward end portion inserted in said fuel gasifying member.

3,892,519

LIQUID BUBBLE SCREEN SEAL FOR CONTROLLING COMBUSTIBLE GASES

Robert D. Reed, Tulsa, and Eugene C. McGill, Skiatook, both of Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Apr. 15, 1974, Ser. No. 460,948
Int. Cl. F23d
U.S. Cl. 431—202 9 Claims



1. Apparatus for controlled burning of combustible gases, comprising:

a. a cylindrical tank, and means for maintaining a selected level of non-combustible liquid in said tank;

b. a first wall outside of said tank wall forming first annular space surrounding said tank for the downflow of said combustible gases;

c. a plurality of circumferentially spaced small openings in the wall of said tank near its base communicating with said first annular space;

d. baffle means inside said tank above said openings but below the surface of said liquid, said baffle means including at least a first horizontal plate with a plurality of spaced small openings;

e. cylindrical shell means inside of said tank above the surface of said liquid, and thermal insulation means between said shell and the wall of said tank;

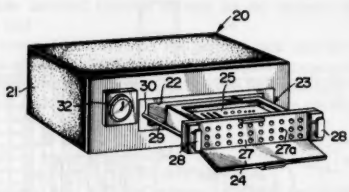
f. means to supply said gas to the top of said annular space, and means to ignite said gas above the level of said liquid.

3,892,520

ANNEALING OVEN FOR THERMOLUMINESCENCE DOSIMETER

Kiyohiko Masujima; Noboru Kotera, and Teiichi Hitomi, all of Kanagawa, Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Filed Apr. 10, 1974, Ser. No. 459,717
Claims priority, application Japan, Apr. 26, 1973, 48-47488
Int. Cl. F27b *3/02, 3/18*
U.S. Cl. 432—225 12 Claims



1. An annealing oven for thermoluminescence dosimeters comprising:

a housing,

a heating box having a hollow space, said heating box being positioned in said housing,

a thermoluminescence dosimeter holder having a high thermal conductivity, movable between a first position in which the holder is in the hollow space of said heating box and a second position in which at least a part of the holder is out of the hollow space of the heating box,

said thermoluminescence dosimeter holder having a plurality of faces, a first face comprising means for receiving thermoluminescence dosimeters without a grip therein and a second face having outwardly facing holes therein, said second face comprising means for accomodating a rod shaped portion of a thermoluminescence dosimeter having a grip, and

an air space formed between said thermoluminescence dosimeter holder and said heating box when the thermoluminescence dosimeter holder is in said first position, said air space having a width sufficient to insure uniform heating of the thermoluminescence dosimeters in said holder.

3,892,521

PROCESS FOR DYEING CELLULOSIC MATERIALS

Jean Paul Dalle, Saint Quentin, France, assignor to Omnium de Prospective Industrielle, S.A., Neuville Saint Amand, Aisne, France

Filed May 17, 1973, Ser. No. 361,255

Claims priority, application France, May 18, 1972, 72.17912

Int. Cl. D06p *3/60*

U.S. Cl. 8—82 7 Claims

1. A process for the dyeing of a material composed of cellulosic fibers deep colors, which process comprises treating said material in a bath of liquid ammonia to impregnate the fibers of said material with said ammonia, and thereafter dyeing the ammonia-impregnated fibers of said material in an aqueous dyebath containing a dyestuff for said cellulosic fibers.

3,892,522

WASHING OR DYEING WITH A NON-TERMINAL, VICINAL ALKANEDIOL ADDUCT OF ETHYLENE AND PROPYLENE OXIDES

Wolfgang Schade, Hilden; Peter Krings, Krefeld, and Heimold Batka, Dusseldorf-Reisholz, all of Germany, assignors to Henkel & Cie, GmbH, Dusseldorf, Germany

Filed Dec. 13, 1972, Ser. No. 314,688

Int. Cl. D06p *1/68*

U.S. Cl. 8—93 7 Claims

1. In the process of treating textiles which comprises contacting said textiles with an aqueous textile treating bath containing a wetting agent and recovering said treated textiles, the improvement which consists in utilizing from 0.1 to 5 gm/liter of a poorly foaming alkylene oxide adduct of from 5 to 20 mols of ethylene oxide and from 1 to 10 mols of propylene oxide in a mol ratio of 1:0.1 to 1 to a nonterminal, vininal alkanediol having from 10 to 20 carbon atoms, as said wetting agent.

3,892,523

BLEACHING OF ALDEHYDE-TANNED LEATHER WITH SODIUM BOROHYDRIDE

George H. Redlich, Norristown, and Michael L. Alderman, Broomall, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jan. 8, 1973, Ser. No. 321,904

Int. Cl. C14c *3/28*; D06l *3/10*

U.S. Cl. 8—94.2 5 Claims

1. In a process for tanning leather by treating the leather with a solution of an aldehyde thereby producing a tanned leather, the improvement which comprises bleaching the tanned leather with an effective amount of sodium borohydride.

3,892,524

MERCERIZING SOLUTIONS

Hans-Jerg Kleiner, Bad Soden, Taunus; Karl-Heinz Schneider, Kelkheim, Taunus, and Gerhart Schneider, Schneidhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

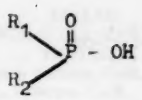
Filed June 21, 1973, Ser. No. 372,330

Claims priority, application Germany, June 26, 1972, 2231147

Int. Cl. D06m *1/02*

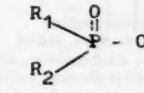
U.S. Cl. 8—127 4 Claims

1. An aqueous mercerizing solution essentially consisting of about 10 to 400 g/l of sodium, potassium or lithium hydroxide or a mixture thereof, and 0.1 to 5 g/l of a phosphinic acid of the formula



in which R_1 stands for a methyl or ethyl group and R_2 stands for an aliphatic linear, branched or cyclic hydrocarbon radical having 4 to 12 carbon atoms, in the form of its alkali metal salt.

4. A process for treating with lyes and mercerizing cellulosic fibrous material, which comprises treating the fibrous material with an aqueous alkaline mercerizing solution essentially consisting of about 10 to 400 g/l of sodium, potassium or lithium hydroxide and as a wetting agent 0.1 to 5 g/l of a phosphinic acid of the formula



in which R_1 stands for a methyl or ethyl group and R_2 for an aliphatic linear, branched or cyclic hydrocarbon radical having 4 to 12 carbon atoms, preferably 6 to 10 carbon atoms, in the form of its alkali salt.

3,892,525

TERTIARY ALKANOLAMINES TO REDUCE OZONE FADING OF DYED POLYAMIDE FIBERS

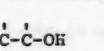
Robert Alden Lofquist, Richmond, Va., assignor to Allied Chemical Corporation, Petersburg, Va.

Filed Oct. 30, 1972, Ser. No. 302,385

Int. Cl. D06p *5/02*

U.S. Cl. 8—165 2 Claims

1. A composition of matter comprising from about 92 to about 99.9% by weight of a polycarbonamide and from about 0.1 to about 8% by weight of a compound coated on said polycarbonamide selected from the group consisting of compounds having at least two



groups attached to nitrogen atoms and created by the reaction of

A. a polyepoxide with a secondary alkyl amine,

B. a diepoxide with a primary alkyl monoamine and/or ammonia and/or a secondary alkyl amine.

3,892,526

TERTIARY ALKANOLAMINES TO REDUCE OZONE FADING OF DYED POLYAMIDE FIBERS

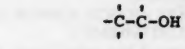
Robert Alden Lofquist, and Peter Reginald Saunders, both of Richmond, Va., assignors to Allied Chemical Corporation, Petersburg, Va.

Filed Oct. 30, 1972, Ser. No. 302,384

Int. Cl. D06p *5/02*

U.S. Cl. 8—165 3 Claims

1. A composition of matter comprising from about 92 to about 99.9% by weight of a polycarbonamide and from about 0.1 to about 8% by weight of a compound coated on said polycarbonamide selected from the group consisting of compounds having at least one



group attached to a nitrogen atom and created by the reaction of

A. a monoepoxide having greater than 4 carbon atoms provided said monoepoxide is not styrene oxide with ammonia and/or
a primary alkyl amine, and/or
a secondary alkyl amine, and/or
a primary-secondary alkyl diamine, and/or
a disecondary alkyl diamine, and/or
a secondary-tertiary alkyl diamine, and/or
a primary-tertiary alkyl diamine, and/or
a diprimary alkyl diamine, and/or
a polyamine,

B. a monoepoxide having four or less carbon atoms and/or styrene oxide with
a secondary alkyl amine, and/or
a disecondary alkyl diamine, and/or
a secondary-tertiary alkyl diamine, and/or
a primary-tertiary alkyl diamine, and/or
a polyamine having greater than 2 carbon atoms per nitrogen atom, and

C. styrene oxide with ammonia.

3,892,527

PROCESS FOR LOWERING THE DYESTUFF AFFINITY OF FIBRE MATERIALS MADE OF POLYACRYLONITRILE

Ergun Tamer, Bergisch, Neukirchen; Udo Hendricks, Cologne, and Mathieu Quaedvlieg, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Feb. 16, 1970, Ser. No. 11,917

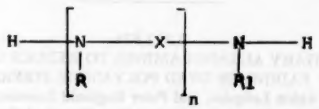
Claims priority, application Germany, May 31, 1969, 1927920

Int. Cl. D06p *5/06*

U.S. Cl. 8—172 **8 Claims**

1. Process for lowering the dyestuff affinity of polyacrylonitrile or polyacrylonitrile copolymer fiber materials comprising the step of treating said fiber materials before dyeing with an aqueous composition containing a water-soluble polyamide obtained by the reaction of

A. an aliphatic polyamine of the formula



in which

R and R_1 independently of one another are hydrogen, alkyl of 1 to 5 carbon atoms or hydroxyalkyl of 1 to 3 carbon atoms;

X is an alkylene radical of 1 to 6 carbon atoms; and

n is an integer from 1 to 4; with

B. α,β-unsaturated aliphatic monocarboxylic acid, aliphatic polycarboxylic acid, or a functional derivative of said acids capable of amide formation said functional derivative selected from the group consisting of acid halides, amides, anhydrides, and esters.

3,892,528

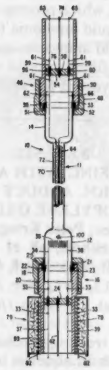
METHOD AND APPARATUS FOR VAPORIZING LIQUIDS TO BE CONTACTED WITH A CARRIER GAS

Alan D. Fredericks, College Station, Tex., assignor to Oceanography International Corporation, College Station, Tex.

Filed Apr. 2, 1973, Ser. No. 346,905

Int. Cl. G01n *31/12*

U.S. Cl. 23—230 PC **3 Claims**



2. In a method of reacting chemical substances in a liquid with a carrier gas by injecting the liquid into a chamber through which the gas flows and heating the liquid in the chamber to a sufficient temperature to cause reaction between the chemical substances and the carrier gas, the improvement which comprises:

injecting the liquid into the chamber onto a first current conductive filament so formed that it will retain the liquid thereon by capillary action;

impressing a voltage across the first filament to raise the temperature of the filament to a relatively low temperature to prevent substantially instantaneous volatilization of the liquid retained on the filament;

directing the carrier gas over said first filament to permit it to entrain the volatilized liquid and carry it over a second filament contained within the chamber;

impressing a voltage across the second filament to raise the temperature sufficiently to cause reaction between substances in the volatilized liquid and the carrier gas; and

discharging the unreacted components and by-products of the reaction from the chamber.

3,892,529

RAPID DIGESTION PROCESS FOR DETERMINATION OF TRICHINELLAE IN MEAT

Paul M. Giles, Los Alamos, assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 1, 1974, Ser. No. 456,995

Int. Cl.² G01N *33/16*

U.S. Cl. 23—230 B **6 Claims**

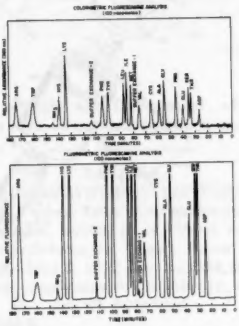
1. An improved digestion process for determination of *trichinellae* in meat comprising placing the meat in a blender, adding at least a digestant selected from the class consisting of sodium hypochlorite, hydrochloric acid and pepsin, papain, bromelin, or trypsin, said digestant having a pH range of 2.0 to 7.2, blending for about 1 minute, pouring the solution into a receptacle allowing any particulate to settle to the bottom of said receptacle, extracting samples from the bottom of said receptacle, visually or automatically counting any *trichinellae*

that may be present, and the total digestion period is of the order of a few minutes.

3,892,530
COLORIMETRIC AND FLUOROMETRIC METHOD

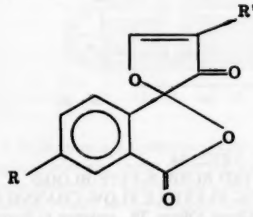
Arthur Martin Felix, West Caldwell; Voldemar Toome, Nutley, and Manfred Weigele, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sept. 23, 1974, Ser. No. 508,599
Int. Cl. G01n *21/52, 31/22*
U.S. Cl. 23—230 R **8 Claims**



6. An assay method for detecting primary and secondary amino acids which method comprises:

a. treating a sample containing amino acids with a compound of the formula



I

wherein R is hydrogen, halogen, lower alkyl or lower alkoxy and R′ is lower alkyl or aryl

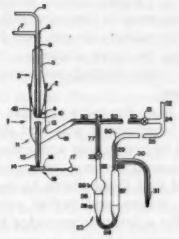
so as to produce a mixture of fluorophors and chromophors; and,

b. simultaneously detecting said chromophors and fluorophors, respectively, colorimetrically and fluorometrically wherein any primary amino acids in said sample will be detected both fluorometrically and colorimetrically and any secondary amino acids present in said sample will be detected only colorimetrically.

3,892,531
APPARATUS FOR SEQUENCING PEPTIDES AND PROTEINS

Paul T. Gilbert, Santa Barbara, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 5, 1973, Ser. No. 376,794
Int. Cl. G01n *33/16*
U.S. Cl. 23—253 R **20 Claims**

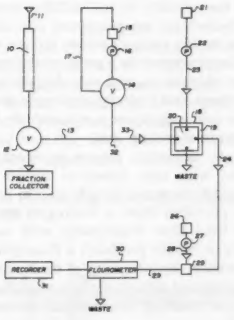


1. A sequencer comprising a reaction chamber having inlet and outlet openings, a sample holder extending downwardly into said chamber and serving to retain a sample on a lower surface thereof, means for selectively heating and cooling said sample holder, and means for selectively introducing chemical vapors and inert gas into said reaction chamber whereby said chemical vapors can be condensed on the sample holder when said sample holder is cooled and the liquid on said sample holder can be evaporated by the inert gas when said sample holder is heated.

3,892,532
FLUORESCAMINE PEPTIDE ANALYZER

Peter Bohlen, Haledon, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 24, 1973, Ser. No. 409,221
Int. Cl. G01n *33/16;* **F16k** *3/08*
U.S. Cl. 23—253 R **7 Claims**



1. An improved fluorescence peptide analyzer which analyzer comprises in combination:

a. peptide sample separation means wherein a peptide containing sample is eluted into an eluent stream of varying peptide content;

b. discontinuous two-position sampling valve means in operative fluid flow relationship with said peptide sample separation means whereby said eluent stream is brought

to said sampling valve means wherein in a first valve position said eluent stream is sent to a fraction collector and in a second valve position said eluent stream is diverted as a sample stream;

c. alkaline solution addition valve in operative fluid flow relationship with said diverted sample stream wherein alkaline solution derived from an alkaline solution storage means in operative fluid flow relationship with said addition valve is added to said diverted sample stream so as to produce an alkaline sample stream;

d. hydrolyzer component in operative fluid flow relationship with said alkaline sample stream, said hydrolyzer component comprising an outer enclosure containing heating means and an inner hydrolyzer valve, said hydrolyzer valve comprising

i. a cylindrical plate having a plurality of channels bored through its longitudinal axis and disposed symmetrically around its center axis said cylindrical plate being rotatably mounted between an upper and a lower fixed plate, one of said fixed plates having alkaline sample stream inlet means and buffer solution inlet means wherein buffer solution is provided from a buffer solution storage means which is in operative flow relationship with said buffer solution inlet means and the other having waste outlet means and detection system outlet means, said inlet and outlet means being so constructed and arranged as to be in operative fluid flow relationship with any two suitably opposed channels in said cylindrical plate and in particular said alkaline sample stream inlet means and said waste outlet means are in operative fluid flow relationship with each other through a suitably opposed channel in said cylindrical plate and said buffer solution inlet means and said detection system outlet means are in operative fluid flow relationship with each other through a suitably opposed channel in said cylindrical plate, and

ii. a stepping motor operatively connected to said cylindrical plate, said stepping motor having a step corresponding to the number of channels in said cylindrical plate which stepping motor upon activation will cause corresponding rotation of said cylindrical plate, wherein rotation of said cylindrical plate will cause entrapment and transfer of alkaline sample stream contained in the channel opposing said alkaline sample stream inlet means and waste outlet means, said entrapment and transfer continuing with concomitant hydrolysis of the peptides in said alkaline sample stream to form a hydrolyzed sample stream containing hydrolysis products having primary amino groups until said channel has been rotated to a position opposing said buffer solution inlet means and said detection system outlet means where said hydrolyzed sample stream is washed out from said hydrolyzer component by buffer solution from said inlet means; and,

e. fluorescence detection means in operative fluid flow relationship with said detection system outlet means wherein said hydrolyzed sample stream is treated with a fluorogen provided from a fluorogen storage means in operative fluid flow relationship with said hydrolyzed sample stream which produces a fluorophor by reaction with the primary amino group of the hydrolysis products in said hydrolyzed sample stream, said fluorophor is excited and the resulting fluorescence measured.

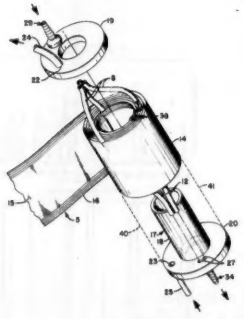
3,892,533

OXYGENATOR GAS DISTRIBUTION HEADER

Frank B. Freedman, St. Louis Park, and Keith A. Ufford, Osseo, both of Minn., assignors to Sci-Med, Inc., Minneapolis, Minn.

Filed Mar. 2, 1973, Ser. No. 337,677
Int. Cl. A61m 1/03
U.S. Cl. 23—258.5 **2 Claims**

1. A blood oxygenator assembly comprising a spool having a cylindrically shaped core with upper and lower disk shaped end plates at opposite ends thereof, an elongated rectangularly shaped envelope made of gas permeable membrane sheets and defining an enclosed space, inlet and outlet tubing means attached to said envelope for conveying gas to, from and within said enclosed space substantially in one direction, said envelope being spirally wound on said core to define a second space for the flow of blood between adjacent turns of said spirally wound envelope, said end plates each having a port communicating with said second space to which blood



carrying tubing may be attached for conveying blood to, from and within said second space in a direction substantially countercurrent to said first-mentioned direction, aperture means in said end plates through which said inlet and outlet tubing extends, said aperture means in each of said end plates including a set of at least two holes, each of said end plates having a collar extending therefrom in surrounding relation to the set of said holes therein, and tubing connector means attached to each of said collars.

3,892,534

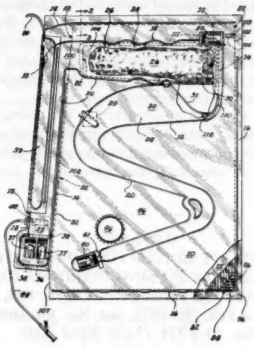
RIGIDLY MOUNTED BUBBLE-TYPE BLOOD OXYGENATOR HAVING FLEXIBLE FLOW CHANNELS

Ronald J. Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Jan. 2, 1974, Ser. No. 430,104
Int. Cl. A61m 1/03
U.S. Cl. 23—258.5 **9 Claims**

1. In a bubble-type blood oxygenator which comprises: a flexible envelope having sealed portions defining in said envelope a flow passage with a blood oxygenating portion and a blood defoaming portion, and which has means for introducing a stream of blood and a stream of oxygen bubbles into one end of said flow passage, and means for removing blood from the other end of said flow passage, the improvement compris-

ing: rigid backing means operatively associated with and carrying and maintaining said envelope in flat, stretched-out



configuration, whereby said flow passage, when filled with blood, exhibits reduced outward distension and sagging.

3,892,535

AMMONIA SYNTHESIS CONVERTER

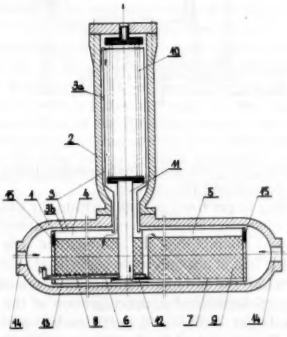
Waclaw Hennel, Pulawy; Jan Cyrus-Sobolewski, Tarnow, and Zbigniew Bartosik, Lublin, all of Poland, assignors to Instytut Nawozow Sytucznych, Pulawy, Poland

Filed May 8, 1973, Ser. No. 358,287

Claims priority, application Poland, May 10, 1972, 155277

Int. Cl. B01j *9/04*

U.S. Cl. 23—288 K **6 Claims**



1. In an ammonia synthesizing converter apparatus embodying fluid inlet and outlet passages, and a heat exchanger (**10**) in communication with at least a pair of low-pressure reaction chambers (**4,5**) having catalyst beds (**6,7**), the improvement wherein said converter apparatus is of unitary inverted generally T-shape comprising unitarily-interjoined horizontal (**1**) and vertical (**2**) high-pressure outer vessel components including wall means forming respectively intercommunicating horizontal and vertical outer chambers; said horizontal outer vessel component having fluid inlet passages near longitudinally opposite end portions for fluid flow communication of a feed gas into said outer chambers; said vertical outer vessel component having a fluid outlet passage at a top end portion thereof; said horizontal outer vessel component having disposed therein, in radially spaced relation, separate wall means defining a horizontal inner low-pressure vessel (**3***b*) including means forming at least first and second low-pressure reaction chambers (**4,5**) in longitudinal disposition for housing said catalyst beds; said high-pressure outer vertical vessel component (**2**) having therein separate wall means spaced radially inward thereof and defining a vertical inner low-pressure chamber (**3a**) for housing upright heat-exchanger means (**10**) therein; said first and second chambers being generally on opposite sides of said vertical outer and inner chambers; said heat exchanger means having first and second sides; means serially connecting one end portion of said first reaction chamber (**4**) with an adjacent end portion of the second reaction chamber (**5**) for fluid flow communication therebetween; said vertical inner chamber (**3***a*) having open upper and lower portions, said open upper portion being in direct communication via said radial spatial disposition with said outer vertical chamber (**2**) and with said horizontal chamber (**1**); said open lower portion connected unitarily to and for fluid communication with said first reaction chamber (**4**); said first side of said heat-exchanger means being in open communication at the upper end with said vertical horizontal outer chambers and at the lower end with said first reaction chamber (**4**), and said second side of said heat exchanger means being in open communication at the upper end with said fluid outlet passage in the vertical outer high-pressure vessel component, and at the lower end with said second reaction chamber (**5**); means connecting said fluid outlet passage for fluid flow communication with said second side of said heat-exchanger means; said reaction chambers (**4,5**) and inner vertical chamber (**3***a*) collectively also being of inverted generally T-shape; said heat-exchanger means disposed uprightly within said inner vertical chamber (**3***a*), and combined fluid conduit and support means supporting said heat-exchanger means in spaced generally coaxial relation therewith so as to permit engagement-free lateral and vertical movement to accommodate any dimensional changes occasioned by thermo-expansion of said apparatus; and said inner and outer pressure chambers, said catalyst beds, and said heat-exchanger means collectively disposed so as to provide fluid gas-flow entering opposite ends of said horizontal outer vessel component in communication with said heat-exchanger means so as to flow past said first side of said heat exchanger means into said first reaction chamber (**4**), passing therethrough and serially into said second reaction chamber (**5**), and thence serially past said second side of said heat-exchanger means and out of said outlet passage of said outer vertical high-pressure vessel component.

3,892,536

APPARATUS FOR THE PURIFICATION OF WASTE GASES FROM INTERNAL COMBUSTION ENGINES

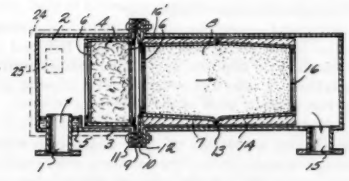
Helmut Roeser, Frankfurt; Herbert Völker, Wolfgang, and Hans-Dieter Brand, Hanau, all of Germany, assignors to Decatox, GmbH, Frankfurt, Germany

Filed Nov. 26, 1973, Ser. No. 419,098

Claims priority, application Germany, Nov. 27, 1972, 2257968

Int. Cl. F01n *3/14;* **B01d** *46/30;* **B01j** *9/04*

U.S. Cl. 23—288 F **13 Claims**



1. Apparatus for the purification of exhaust gases from internal combustion engines comprising

a. a first housing structure having interior walls and a gas inlet, the downstream end wall of said first housing being

open and adapted for connection to a second housing structure,

b. a second housing structure having an open upstream end wall and being adapted to be connected to said first housing structure for gas flow therebetween and having interior walls and a gas outlet,

c. means connecting said first housing downstream end wall to said second housing upstream end wall with means providing a gas-tight communication therebetween,

d. means for providing for oxidation of combustible exhaust gas components, said means comprising a casement member disposed within said second housing structure, said casement member containing a catalyst and providing a flow channel for gases,

e. means for prolonging the useful life of catalyst within said casement member and minimizing the chances of untreated gases passing through said apparatus by minimizing the introduction of soot, water vapor, and unburned hydrocarbons during startup and by buffering gas thrusts, said means including a buffer casement having buffering means contained therein disposed within said first housing structure and providing a path through which gases must pass before entering said casement member, and

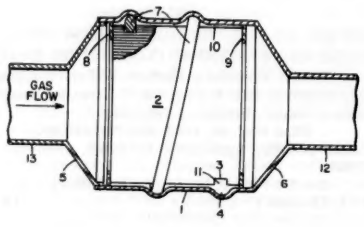
f. means for preventing damage to catalyst contained within said casement member due to vibration, said means including (i) means for mounting said casement member for oscillation about a pivot, said means including flat spring means mounted to the upstream end wall of said second housing structure, and (ii) a vibration damping and heat insulating jacket surrounding said casement member thereby being disposed between said casement member and the interior walls of said second housing structure.

3,892,537

PRELOAD MEANS FOR CERAMIC SUBSTRATE IN EXHAUST GAS PURIFIERS

Suresh T. Gulati, Elmira; Henry E. Hagy, Painted Post, and John S. McCartney, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 28, 1973, Ser. No. 419,540
Int. Cl. B01j *9/04;* **B32b** *3/20;* **F01n** *3/14*
U.S. Cl. 23—288 FC **4 Claims**



1. A catalytic converter comprising

a. a cylindrical casing having a radially outward helical channel in the casing inner surface and first and second end closures on opposite ends of the casing terminating, respectively, in inlet and outlet pipes for allowing gas flow between opposite ends of the catalytic converter,

b. a cylindrical, monolithic, honeycombed ceramic substrate having a plurality of open ended cells extending between opposite ends of the substrate and a catalytically active coating thereon, the substrate having a lesser diameter than and being contained axially within the casing, and further having a helical groove on the periphery of the substrate complementarily aligned with and defining a helical conduit with the radially outward helical channel in the casing,

c. an elongated, resilient, flexible means slidable within the helical channel and being disposed and compressed within the helical conduit and having a greater cross-sectional area in an uncompressed state than the cross-sectional area of the helical conduit, but being compressible to yield a cross-sectional area lesser than the cross-sectional area of the conduit; the elongated, resilient, flexible means being capable of remaining elastic and in compression within the helical conduit at the operating temperatures of the catalyst support, and

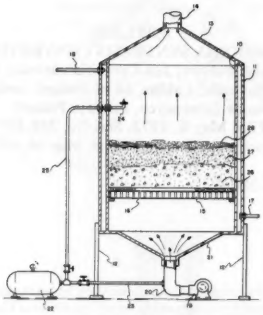
d. additional securing means fixed to the casing at opposite ends of the substrate for restricting the axial movement of the substrate in the casing and preventing the entrance of gases into an annular space between the casing and the substrate.

3,892,538

METHOD AND APPARATUS FOR GENERATING HIGH TEMPERATURE ZONE USING FIXED-FLUIDIZED BED

Ram Gopal Seth, 1112 Yardley Rd., Cherry Hill, N.J. 08034

Filed Feb. 28, 1973, Ser. No. 336,408
Int. Cl. F27b *15/00;* **B01d** *9/00*
U.S. Cl. 23—295 **3 Claims**



1. The method of generating high temperatures within a defined zone comprising the steps of:

interdisbursing larger fixed particles within the lower region of a bed of smaller particles capable of fluidization; and passing and maintaining a combustible gas mixture through the bed at a steady state superficial velocity at or slightly below the minimum fluidization velocity of the smaller particles whereby, upon ignition of the gas mixture, the larger unfluidized particles will stabilize the incipient fluidization of the smaller particles and a high temperature zone of gas combustion will occur in the top zone of the bed of smaller particles.

3,892,539

PROCESS FOR PRODUCTION OF CRYSTALS IN FLUIDIZED BED CRYSTALLIZERS

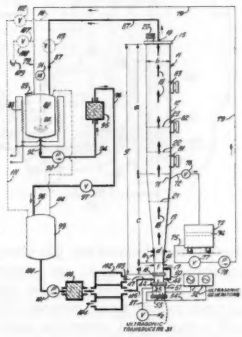
Michael Midler, Jr., Clark, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 861,231, Sept. 26, 1969, which is a division of Ser. No. 626,749, March 29, 1967, Pat. No. 3,510,266. This application Dec. 20, 1971, Ser. No. 210,220
Int. Cl. B01d *9/02*
U.S. Cl. 23—301 R **13 Claims**

1. An improved method of operating a fluidized bed crystallizer that includes a column (i) in which a bed of crystals of a solid product is fluidized by the upward flow therethrough

of a fluidizing liquid that is super-saturated with the same solid product, so that some of the product in the fluidizing liquid crystallizes out onto the fluidized crystals, which thereupon increase in size and weight, the fluidizing liquid being fed in such super-saturated condition under pressure from outside the column into the column near its bottom, and (ii) in which some of the crystals on which product from the fluidizing liquid has deposited become sufficiently heavy to migrate downward, against the upward flow of the fluidizing liquid, to the bottom portion of the column, said improvement comprising:

a. bleeding some of the fluidizing liquid from the column at a point below the top of the fluidized bed of crystals so



that some of the fluidized crystals are carried out of the column; and

b. creating in the bottom portion of the crystallizer a cavitation zone vibrating at ultrasonic frequency and of sufficient intensity to cause crystals which reach said bottom portion of the column against the suspending action of the fluidizing liquid, to break into two or more smaller crystals which move upwardly in the column with the upward flow of the fluidizing liquid, with the result that prolonged operation of said crystallizer may be effected, and bleeding of the crystals from the fluidized bed effected during such prolonged operation, without introducing seed crystals into the column to replace crystals withdrawn by such bleeding.

3,892,540

PRODUCING MONOCRYSTALLINE BODIES BY THE VERNEUIL METHOD

Arnaldo Cioccolani, Champl sur Drac, France, assignor to Ugine Kuhlmann, Paris, France

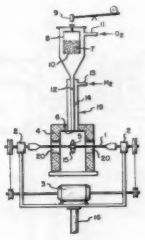
Continuation-in-part of Ser. No. 100,577, Dec. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 584,168, Oct. 4, 1966, abandoned. This application Dec. 8, 1972, Ser. No. 313,270

Claims priority, application France, Oct. 4, 1966, 33.725.

Int. Cl. B01j *17/00, 17/20*

U.S. Cl. 23—301 SP **8 Claims**

1. A flame fusion process for the production of synthetic monocrystalline bodies which comprises horizontally supporting a monocrystalline rod within a furnace, the rod having been machined to provide at least one preformed radially enlarged portion to orient the lattice of the synthetic bodies, passing powdered material of substantially the same composition as the rod through a flame to fuse the same, directing the flame at the outer periphery of the preformed radially enlarged portion of the rod thereby depositing and building up the fused material by crystallization on such outer periphery, rotating the rod about its axis at a rate fast enough so that the part of the outer periphery of the radially enlarged portion of the rod which is in contact with the flame is in a sufficiently molten state to produce a radially outwardly enlarging crystal of increasing diameter, and varying the distance between the



flame and the outer periphery of the radially enlarged portion of the rod as the diameter of the crystal increases to maintain a predetermined relationship between the flame and such outer periphery whereby a monocrystalline body having a diameter of as much as about 120 mms. may be produced.

3,892,541

HIGHLY CASTABLE, WELDABLE, OXIDATION RESISTANT ALLOYS

Robin Mackay Forbes Jones, Suffern, N.Y., and Walter Adrian Petersen, Ridgewood, N.J., assignors to The International Nickel Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 384,799, Aug. 2, 1973, abandoned. This application Dec. 13, 1974, Ser. No. 532,330

Int. Cl.[2] B23P *3/00;* **C22C** *19/05, 38/44, 38/54*

U.S. Cl. 29—196.1 **11 Claims**

1. A highly castable and weldable heat resistant alloy affording high temperature oxidation resistance consisting essentially of (by weight) up to about 1.4 percent carbon, less than 8.5 percent molybdenum, the carbon and molybdenum being specially correlated according to the following relationship:

$$\%Mo + 6(\%C) < 8.5$$

from about 1.5 to about 4 percent silicon, up to about 4.5 percent manganese, from about 16 to about 30 percent chromium, up to about 50 percent iron, from about 0.1 to about 1 percent boron for alloys containing molybdenum and from about 0.1 to about 0.5 percent for alloys without molybdenum, and the balance, in an amount of at least about 35 percent, essentially nickel, the nickel being further correlated such that for alloys not containing molybdenum, the nickel content does not exceed about 49 percent.

3,892,542

REACTOR FOR PRESSURE TYPE GASIFICATION OF COAL

Fritz Zimmerman, Essen-Steele, and Hans-Joachim Pogrzeba, Essen, both of Germany, assignors to Steag AG, Essen, Germany

Filed Sept. 9, 1974, Ser. No. 504,690

Claims priority, application Germany, Oct. 17, 1973, 2352078

Int. Cl. C10j *3/76*

U.S. Cl. 48—67 **7 Claims**

1. A reactor for pressure type gasification of coal comprising

a reactor housing having an outer wall,

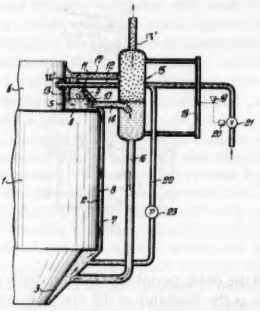
a shell spaced from said outer wall to provide a cooling water jacket,

means providing a collector chamber on the upper portion of said reactor housing and receiving cooling water from said jacket,

pipe means leading from the upper portion of said chamber for conveying saturated steam therefrom to said reactor housing,

a compensating tank spaced from the reactor housing,

a tube connection between the lower end of said tank and the lower portion of said cooling water jacket,



a sensor for indicating the cooling water level in said tank,

a side wall of said collector chamber having an overflow lip, said side wall being disposed inside said shell, and

an open ended pipe extending from said collector chamber through said shell to said compensating tank enabling cooling water to flow from said chamber to said tank.

3,892,543

METHOD OF THE REMOVAL OF CHEMICALLY ACTIVE COMPONENTS FROM DUST-LADEN GAS STREAMS

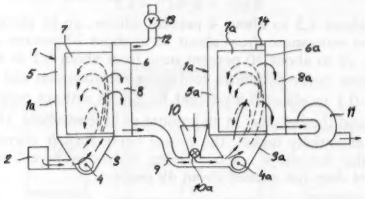
Adolf Margraf, Im Haberkamp 196, 4961 Wendthagen, Germany

Filed Oct. 9, 1973, Ser. No. 404,748

Claims priority, application Germany, May 26, 1973, 2327020

Int. Cl. B01d *46/04*

U.S. Cl. 55—96 **3 Claims**



1. A process for removing substances from a particle-containing gas stream having a noxious component capable of interaction with and retention by a particulate-solid additive, said process comprising the steps of:

a. passing the particle-containing gas stream through a first pocket filter to remove the particles therefrom and produce a prepurified gas;

b. feeding into and admixing with the prepurified gas emerging from said first filter and freed from said particles a predetermined quantity per hour of said particle-solid additive capable of binding said component in the form of solid particles of the additive and said component;

c. passing the prepurified gas admixture with said additive through another pocket filter to trap said particles of additive and said component upon a surface thereof;

d. periodically dislodging said solid particles of additive and said component from said surface and re-entraining them with the prepurified gas onto said surface until the quantity of the additive on said surface is 100 to 1,000 times greater than said predetermined quantity, said prepurified gas thereafter passing through the layer thus formed on said surface; and

e. maintaining the steady state of said layer by removing particles of additive and said component from the surface as recited in step (d) and from the gas stream at substantially the hourly rate that said additive is supplied to said layer by said prepurified gas.

3,892,544

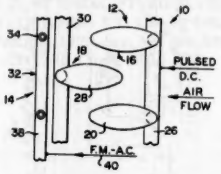
ELECTRODYNAMIC ELECTROSTATIC GAS CHARGE

Hans O. Haupt, Indianapolis, Ind., assignor to CRS Industries, Inc., Tampa, Fla.

Filed July 16, 1973, Ser. No. 363,487

Int. Cl. B03c *3/66*

U.S. Cl. 55—106 **18 Claims**



1. An electrodynamic/electrostatic gas charge system configured for operation within a gas stream, said electrodynamic/electrostatic gas charge system comprising a first and second electrode means, signal generator means including first and second output signal generator means generating a first and second output voltage signal respectively, said first electrode means operatively coupled to said first output signal generator means to receive said first output voltage signal, said second electrode operatively coupled to said second output signal generator means to receive said second output voltage signal, said signal generating means further including control means to vary said second output voltage signal with changes in environmental conditions, said first and second electrode means generating a first and second voltage gradient field respectively.

3,892,545

ARRANGEMENT FOR SUSPENDING AND CONTROLLING PRECIPITATION ELECTRODES

Rolf Goransson, Vaxjo, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Continuation of Ser. No. 248,048, April 27, 1972, abandoned. This application Sept. 13, 1974, Ser. No. 505,903

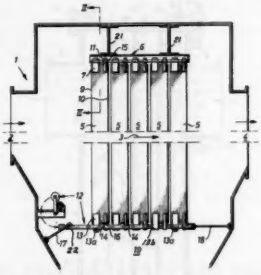
Claims priority, application Sweden, May 12, 1971, 6187/71

Int. Cl. B03c *3/76*

U.S. Cl. 55—112 **5 Claims**

1. An electrostatic precipitator having a casing, vertical elongated substantially flat collecting electrodes disposed in at least one row in said casing with their vertical edges disposed forwardly and rearwardly in the direction of gas flow through said casing, and emission electrodes disposed in a parallel row adjacent said one row, a supportin beam above said row of collecting electrodes, upper suspension means on said collecting electrodes suspending said electrodes on said beam, at least one rapping bar underlying said collecting electrodes, lower suspension means on said collecting electrodes suspending said rapping bar thereon, and means to hammer said rapping bar to displace said collecting electrodes edgewise and dislodge the dust particles adhered thereto; said supportinb beam having an open-top groove tehrein substantially the length of the beam formed by a transverse web and upstanding sidewalls on opposite edges of said web, one of said sidewalls having a free upper edge parallel to said web, said upper suspension means comprising an upstanding suspension iron

on each electrode having a width less the width of the electrode between the vertical edges, said web having a series of spaced longitudinal slots therein, each slot corresponding to the cross section of an iron associated therewith to slidably receive the iron therethrough, each of said irons above said web having a transverse passageway, said upper suspension means for each electrode comprising a pin in said passageway having a length slightly less than the distance between said



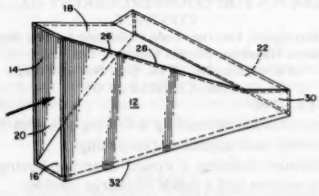
sidewalls and greater than the width of said slot, the pin projecting from opposite sides of its associated iron to bear upon the upper surface of the web and thereby support the collecting electrode on said beam, said iron having a length below the transverse web and above the top of said electrode greater than the height of said free upper edge above said web to permit upward displacement of said iron and said electrode within the plane of the electrode to position said pin above said free edge of removal from said passageway.

3,892,546

ELECTROSTATIC PRECIPITATOR

Charles P. Grisell, Homewood, Ala., assignor to Rust Engineering Company, Birmingham, Ala.

Filed May 31, 1974, Ser. No. 475,124
Int. Cl. B03c *3/36*
U.S. Cl. 55—129 **10 Claims**



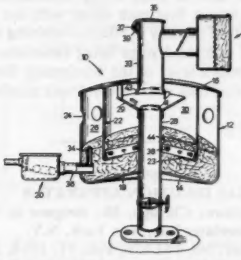
7. An electrostatic precipitator comprising:
a gas passage defined by a top panel, a bottom panel, and a pair of opposed side panels attached to said top panel and said bottom panel and having an inlet and an outlet, said top panel and said bottom panel converging from said inlet to said outlet such that the aspect ratio remains constant from said inlet to said outlet,
discharge electrode means positioned in said gas passage, and
collection electrode means positioned in said gas passage.

3,892,547

VAPORIZING CARBURETOR

Oliver M. Tucker, 1613 E. Blackthorne Pl., Milwaukee, Wis. 53211

Filed July 20, 1973, Ser. No. 381,221
Int. Cl. F02m *17/34*
U.S. Cl. 55—178 **13 Claims**



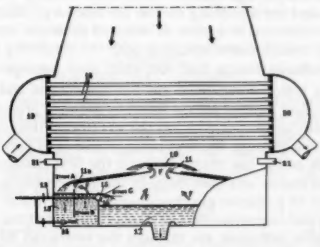
1. A carburetor comprising:
a housing having a liquid fuel reservoir at the bottom,
means for admitting liquid fuel into said reservoir,
a vaporized fuel outlet tube projecting above said liquid fuel in said reservoir,
a primary air inlet in said housing,
an open cell plastic wet vaporizing filter partially immersed in the liquid fuel in the bottom of said reservoir,
a baffle between said air inlet and said air outlet tube for directing primary air through said wet filter,
a bubble break screen downstream from said wet vaporizing filter,
a secondary air inlet in said housing for admitting secondary air into said vaporized fuel path downstream from said bubble break screen,
means on said outlet tube for directing air pulses from said outlet tube into said secondary air inlet, said secondary air inlet comprising a tube aligned with said outlet tube, and means for controlling the flow of secondary air into said housing.

3,892,548

APPARATUS FOR DEGASSING A CONDENSER OPERATING IN A THERMAL CYCLE

Robert Gardey, Le Bourget, France, assignor to Compagnie Electro-Mecanique, Paris, France

Filed May 3, 1974, Ser. No. 466,827
Claims priority, application France, May 5, 1973, 73.16334
Int. Cl. B01d *19/00*
U.S. Cl. 55—194 **6 Claims**



1. A composite structure operating under a vacuum for condensing steam discharged from a turbine unit of a thermal power plant and de-gassing the condensate prior to feeding the condensate back to the boiler for re-cycling which com-

prises a casing having an inlet for the steam, a cooling tube bundle across which the steam passes in heat exchange relation therewith to effect its condensation and a three-stage de-gasifier for treating the condensate to remove non-condensables such as oxygen therefrom, said first stage being established by means injecting steam issuing from the subsequent stages into condensate flowing over a downwardly sloping roof located below the cooling tube bundle thereby to atomize the condensate, said second stage being established by means injecting steam into a first tank filled with the condensate falling from said roof thereby to effect a bubbling action in the condensate, and said third stage being established by means injecting steam into a layer of the condensate flowing across a weir from said first tank into a second tank to effect atomization thereof.

3,892,549

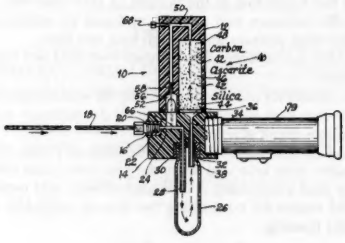
GAS DILUTION APPARATUS

Norman A. Lyshkow, Chicago, Ill., assignor to Combustion Equipment Associates Inc., New York, N.Y.

Division of Ser. No. 441,170, Feb. 11, 1974, Pat. No. 3,853,516. This application June 13, 1974, Ser. No. 478,881

Int. Cl. B01d *51/10*

U.S. Cl. 55—267 **14 Claims**



1. Apparatus for diluting fluids comprising a body, gas inlet means for receiving a gas stream containing a pollutant gas, first passage means in the body communicating with the gas inlet means, trap means mounted on the body and communicating with the first passage means to receive the gas stream flowing therethrough, gas scrubbing means adapted to remove the pollutant gas from the gas stream flowing therethrough, via second passage means which communicate with the trap means and the scrubbing means, gas discharge means adapted to be connected to a zone of reduced pressure, scrubbed gas passage means communicating with the scrubbing means and the discharge means and restricted flow passage means extending into the scrubbed gas passage means and extending into the first passage means whereby reduced pressure applied at the discharge means draws the gas stream through the inlet means and through the first passage means to provide flow of the bulk of the gas stream through the first passage means to the trap means and then through the gas scrubbing means for removal of pollutant gas therefrom and to form an inert diluent gas and to provide flow of a small amount of the gas stream containing pollutant gas through the restricted flow passage means to permit admixture of the small amount of the gas stream containing pollutant gas, with the restricted flow passage means including heating means operatively connected thereto to maintain the temperature of the restricted flow passage means above the due point of the gas stream.

3,892,550

APPARATUS FOR SEPARATING CONDENSATION OF WAX FROM GAS

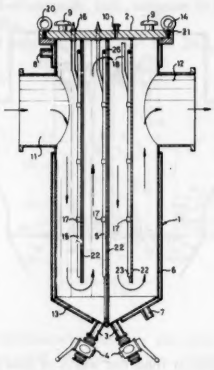
Soren Riis, Fagersta, Sweden, assignor to Seco Tools AB, Fagersta, Sweden

Filed June 19, 1974, Ser. No. 480,937

Claims priority, application Sweden, July 6, 1973, 73095762

Int. Cl.² B01D *45/08*

U.S. Cl. 55—269 **10 Claims**



1. An apparatus for condensation and separation of wax, paraffin etc. from a gas flow, in connection with a vacuum dewaxing furnace for powder metallurgical production, said apparatus being placed between furnace and vacuum pump and comprising a container having inlet and outlet openings for the gas flow and baffle means defining a tortious path therebetween to separate the wax from the gas, characterized by means for vaporizing the wax comprising heater elements mounted inside the container for heating the gas flow from the furnace to a temperature above the boiling point of the wax, means for condensing the wax comprising means for heating the inner walls of the container to a temperature above the fusing point of the wax but below the boiling point of the same and means for draining off the wax thus condensed.

3,892,551

APPARATUS FOR COUNTERCURRENT GAS-SOLID CONTACT

John S. Burnham, Denver, Colo., assignor to The Superior Oil Company, Houston, Harris County, Tex.

Filed June 24, 1974, Ser. No. 482,493

Int. Cl. B01d *53/06*

U.S. Cl. 55—390 **19 Claims**

1. Apparatus for contacting a flowing gas with a granular solid material, said apparatus comprising:

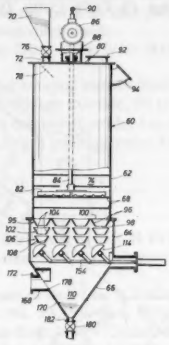
an enclosure defining a closed chamber having a solids entry section and a solids discharge section;

a plurality of louvers mounted within said chamber and defining trough means for directing flow of solid material from said solids entry section toward said solids discharge section, said trough means defining flow passage means for gas flowing through said chamber;

receptacle means disposed within said chamber below said trough means and receiving measured quantities of granular solid material from said trough means, said receptacle means being movable from a position receiving granular solid material from said trough means to a position dumping said granular solid material into said solids discharge section;

gas inlet means being defined in said enclosure for introducing untreated gas into said chamber on one side of said trough means;

gas outlet means being defined in said enclosure on the other side of said trough means;



means for introducing granular solid material into said solids entry section; and

means for discharge granular solid material from said solids discharge section.

3,892,552

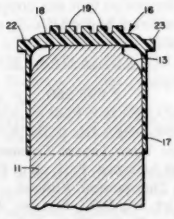
FERTILIZER

Jacob Douglas Gay, Jr., Fayette County, Ky., assignor to International Spike, Inc., Lexington, Ky.

Filed July 6, 1973, Ser. No. 377,120

Int. Cl. C05c *9/00*

U.S. Cl. 71—1 **13 Claims**



1. A one-piece generally wedge-shaped spike comprising particles of fertilizer source materials bound together by a cured thermoset resin, said spike having an elongated body which is substantially elliptical in cross-section, a blunt end and a substantially hemi-ellipsoidal shaped end.

3,892,553

PRODUCT FOR PROVIDING A PHYSICAL MEDIUM FOR PLANT GROWTH

Robert V. Goordman, 16 Laurie Ter., Hackettstown, N.J. 07840, and Fred Ferber, P.O. Box 338, Hewitt, N.J. 07421

Continuation-in-part of Ser. No. 433,848, Jan. 16, 1974, abandoned. This application July 31, 1974, Ser. No. 493,454

Int. Cl. C05f *7/00, 9/00, 13/00*

U.S. Cl. 71—13 **17 Claims**

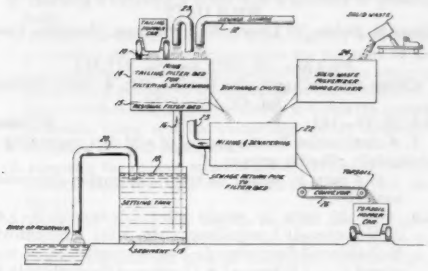
14. A product for providing a physical medium for plant growth by the steps consisting essentially of:

a. mixing pulverized rock and organic sewage sludge in order to form an organically enriched material;

b. adding pulverized garbage to the mixture of step (a);

c. dehydrating the mixture of step (b) to remove any remaining moisture therefrom;

d. crushing the resultant mixture into particles having a diameter of no more than about 2.0 millimeters; and



e. mixing of the mixture of step (d) in order to obtain a bulk density in which the volume of solid material approimates the volume of the air spaces trapped within said material, thereby obtaining a sufficiency of molecular surface area and lattice structure that will permit a water and nutrient retention as well as an ion exchange necessary for the extended physical and chemical support of plant life.

3,892,554

2-AMINO-4-ISOPROPYLAMINO-6-CHLORO-PYRIMIDINE IN MAIZE, WHEAT, POTATOES, ONIONS AND LEEKS

Rupert Schneider, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

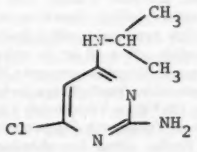
Continuation-in-part of Ser. No. 10,056, Feb. 9, 1970, abandoned. This application Aug. 24, 1971, Ser. No. 174,568

Claims priority, application Switzerland, Feb. 14, 1969, 2234/69

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **10 Claims**

1. The method of combating weeds in a maize locus comprising applying to such a locus the compound of the formula:



or an agriculturally acceptable acid addition salt thereof, in an amount between 1 to 12 kilograms per hectare.

3,892,555

HERBICIDAL AGENTS

Herbert A. Pass, Toronto, Canada; Hans-Rudolf Gerber, Prattein, and David Howard Green, Birsfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 25, 1972, Ser. No. 256,953

Claims priority, application Switzerland, May 28, 1971, 7847/71; Oct. 8, 1971, 14718/71

Int. Cl. A01n *9/22*

U.S. Cl. 71—93 **4 Claims**

1. A herbicidal agent comprising a herbicidally effective amount of a mixture of 2-chloro-4-ethylamino-6-isopropylamino-s-triazine and 3,5-dibromo-4-hydroxybenzaldoxime-(2',4'-dinitrophenyl)-ether, the weight ratio of the 2-chloro-4-ethylamino-6-isopropylamino-s-triazine and the 3,5-

dibromo-4-hydroxybenzaldoxime-(2',4'-dinitrophenyl)-ether being from 1:1 to 1:8.

3,892,556

COMPOSITION AND METHOD FOR CONTROLLING WILD OATS

Elmer H. Stobbe, 97 Linacre Rd., Winnipeg, Manitoba, Canada

Filed Nov. 19, 1973, Ser. No. 417,313
Claims priority, application Canada, Dec. 4, 1972, 157964
Int. Cl. A01n 9/20
U.S. Cl. 71—111 6 Claims

1. A composition for the control of wild oats comprising a herbicidally effective amount of:

a. 1 to 4 parts by weight 4-chloro-2-butynyl-m-chlorocarbanilate,

b. 4 to 20 parts by weight ethyl 2-N-benzoyl-N-(3,4-dichlorophenyl)-2-aminopropionate, ethyl 2-N-benzoyl-N-(3-chloro-4-fluorophenyl)-2-aminopropionate, or isopropyl 2-N-benzoyl-N-(3-chloro-4-fluorophenyl)-2-aminopropionate and

c. an inert, agriculturally acceptable carrier.

3,892,557

PROCESS FOR THE PRODUCTION OF GOLD POWDER IN PLATELET FORM

Klaus Lutz, Bergen-Enkheim, and Manfred Golla, Grossauheim, both of Germany, assignors to Demetron Gesellschaft fur Elecktronik-Werkstoffe mbH, Frankfurt, Germany

Filed May 31, 1974, Ser. No. 475,280
Claims priority, application Germany, June 15, 1973, 2330413
Int. Cl. C22b 11/06
U.S. Cl. 75—0.5 A 9 Claims

1. A process for the production of gold powder in flake form comprising reducing an aqueous hydrochloric acid solution of chloroauric (III) acid with an ethylenically or acetylenically unsaturated alcohol in the presence of a protective colloid.

3,892,558

BRIQUETTE FOR PRODUCING ALUMINUM-SILICON

Dmitry Vladimirovich Ilinkov, ulitsa Tregubenko, 13, kv. 5; Pavel Ilich Volpin, prospekt Lenina, 210, kv. 16; Vasily Petrovich Rumyantsev, ulitsa Sportivnaya, 25, kv. 62; Stanislav Arsenievich Artemenko, ulitsa Stalevarov, 25a, kv. 27; Miro Alivoivodich, ulitsa 40 let So etskoi Ukrainy, 46, kv. 21; Raisa Ivanovna Ragulina, prospekt Metallurgov, 21, kv. 40, all of Zaporozhie; Vasily Grigorievich Zadorozhny, ulitsa Gornyakov, 18; Viktor Viktorovich Varen, ulitsa Gornyakov, 17, both of Volnogorsk Dnepropetrovskoi oblasti; Boris Ivanovich Emlin, ulitsa Dzerzhinskogo, 22, kv. 9, Dnepropetrovsk; Mikhail Ivanovich Gasik, Zaporozhskoe shosse, 6, kv. 9, Dnepropetrovsk; Spiridon Iosifovich Khitrik, prospekt Gagrina, 2, kv. 12, Dnepropetrovsk; Nikolai Semenovich Klimkovich, ulitsa 40 let Oktyabrya, 1, kv. 18, Dnepropetrovsk; Anatoly Yakovlevich Novikov, ulitsa Stasova, 26, kv. 1, Dnepropetrovsk, and Ljudmila Ivanovna Gasik, Kosmichesoke shosse, 19a, kv. 22, Zaporozhie, all of U.S.S.R.

Filed Sept. 18, 1972, Ser. No. 289,945
Claims priority, application U.S.S.R., Sept. 17, 1971, 1695232
Int. Cl. C22c 21/02
U.S. Cl. 75—10 R 2 Claims

1. A briquette for producing aluminum-silicon by the ore reducing smelting process in an electric-arc furnace, the briquette composition comprising, in weight per cent:

carbonaceous reducing agent, 30 to 40;

kaolin, 8 to 40;

alumina 4 to 25; and the remainder

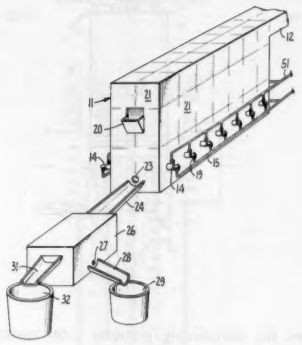
disthene sillimanite.

3,892,559

SUBMERGED SMELTING

Thomas A. A. Quarm, Lafayette, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 858,997, Sept. 18, 1969, abandoned. This application Jan. 5, 1973, Ser. No. 321,220
Int. Cl. C22b 15/00, 19/20
U.S. Cl. 75—21 16 Claims



1. A process for smelting a mineral product in a furnace, said product being selected from the group consisting of a concentrate, a rich ore and a calcine, and containing as its major metal constituent copper, zinc or a mixture thereof, said process comprising the steps: preparing a bath of molten slag in a furnace; agitating the bath to maintain a state of turbulence therein by injecting directly into the molten slag finely divided flux and mineral product, an oxygen-bearing gas and optionally a fuel; regulating the amount of fuel, if any, and oxygen-bearing gas injected into the agitated molten slag to control oxidation-reduction reactions and to vaporize at least one component of the mineral product, the amount of oxygen-bearing gas being limited so that any copper matte present in the bath is not oxidized beyond Cu_2S; and recovering the vaporized component.

3,892,560

PROCESS AND DEVICE FOR FLASH SMELTING SULPHIDE ORES OR CONCENTRATES

Esko Olavi Nermes; Timo Tapani Talonen, both of Kokkola, and Olavi August Aaltonen, Pori, all of Finland, assignors to Outokumpu Oy, Outokumpu, Finland

Filed Oct. 24, 1973, Ser. No. 409,261
Claims priority, application Finland, Oct. 26, 1972, 2977/72
Int. Cl. C21b 1/04; C22b 1/10
U.S. Cl. 75—23 12 Claims

1. In a process for flash smelting a raw material selected from sulphide ores and concentrates, the steps of:

a. feeding into an oxidation zone molten matte from the flash smelting furnace and at least one oxidizing gas selected from the group consisting essentially of air and oxygen;

b. withdrawing roasting gases at roasting temperature from the oxidation zone;

c. feeding to an upper part of a reaction shaft of a flash smelting furnace said roasting gases together with fuel and said raw material; and

d. controlling temperature in the oxidation zone for maintaining the oxygen content in the roasting gases between about 5 percent and about 18 percent by volume and for maintaining the SO_2 content in the roasting gases between about 1 percent and about 10 percent by volume to control the relationship between the oxidation capacity of the oxidation zone and the smelting capacity of the flash smelting furnace reaction shaft.

3,892,561

COMPOSITION FOR TREATING STEELS

Masaru Takashima, Tokyo, Japan, assignor to Aikoh Company, Ltd., Japan

Filed Feb. 12, 1973, Ser. No. 331,871

Claims priority, application Japan, Feb. 28, 1972, 47-020819The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.

Int. Cl. C21c *7/00;* C22b *9/10;* B23k *35/34*

U.S. Cl. 75—58 2 Claims

1. A composition for treating molten steel consisting essentially of 2 to 40 wt. % lithium fluoride, 60 to 98 wt. % sodium fluoride, 6 to 38 wt. % calcium fluoride, 1 to 3 wt. % of K_2TiF_6, said composition having a melting point between 600° and 950°C.

3,892,562

PROCESS FOR PRODUCING HIGH PURITY SILVER

Jaydee W. Miller, Wallingford, Pa., assignor to Pyromet, Inc., Wallingford, Pa.

Continuation-in-part of Ser. Nos. 4,335, Jan. 20, 1970, abandoned, and Ser. No. 93,750, Nov. 30, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,029

Int. Cl. C22b *11/00*

U.S. Cl. 75—83 7 Claims

1. A process comprising

a. producing a melt of silver having a purity of about 99.5% and having, as an impurity, about 0.5% sulfur, the surface of said melt being kept free from slag, flux or other substance which will decrease the surface area

b. injecting and/or passing oxygen of 15–100% purity through and/or over said melt, thereby causing an oxygen-silver interface and violent boiling action at the surface of said melt due to escaping sulfur dioxide,

c. maintaining a gas-liquid interface by continuing said oxygen injection and/or passing until said violent boiling motion on the surface of said melt ceases, and

d. recovering silver having a purity above 99.9%.

3,892,563

METHOD AND APPARATUS FOR SEPARATING THE CONSTITUENTS OF LEAD-ACID STORAGE BATTERIES

Albert E. La Point, Socorro, N. Mex., assignor to Albert E. La Point, Socorro, N. Mex.

Filed May 14, 1973, Ser. No. 359,732

Int. Cl. B02c *9/00;* C22b *7/00*

U.S. Cl. 75—97 15 Claims

1. The method of separating the constituents of a lead-acid storage battery of the type having at least grid plates of antimonial lead, active material consisting of lead, lead oxide and lead sulfate, a case and separators of organic material and acid, comprising the steps of:

a. crushing whole batteries into fragments in a ball mill in the presence of water and sodium carbonate, to form with the active material a heavy medium suspension of density in which the organic material floats and the fragmented grid plates sink; and to react the sodium carbonate chemically with the lead sulfate to transpose it into lead carbonate and to neutralize the acid;

b. the organic material and the suspension continually through an opening at one end of the ball mill onto a first screen adapted to retain the organic material and to pass the suspension therethrough;

c. advancing the fragmented grid plates toward the opposite end of the ball mill; and

d. discharging said fragmented grid plates mechanically through an opening in said other end of the ball mill onto a second screen adapted to retain said fragmented grid plates and pass therethrough any active material adhering thereto, thereby separating the battery constituents into three distinct streams consisting respectively of antimonial lead, active material and organic material.

2. The method of separating the constituents of lead-acid storage batteries of the type having grid plates of antimonial lead, active material consisting of lead, lead oxide and lead sulfate, and cases and separators of organic material which comprises the steps of:

a. charging a cylindrical drum with a quantity of grinding balls;

b. feeding the batteries into the drum together with water;

c. rotating the drum to fragmentize the batteries by impact with the grinding balls, and to agitate the water to form with a portion of the particles of active material a heavy medium suspension of density in which the organic materials floats and the remaining battery fragments including the grid plates sink;

d. removing the organic material and a fraction of the suspension from the drum through an opening at one end thereof;

e. thereafter passing said organic material and suspension fraction over a first trommel screen adapted to retain the organic material and pass the suspension therethrough;

f. advancing the remaining fragments toward the other end of the drum;

g. segregating said remaining fragments by size into smaller and larger fragments;

h. discharging said smaller fragments through an opening in said other end; and

i. passing said smaller fragments over a second trommel screen adapted to retain smaller fragments and pass therethrough any active material adhering to said smaller fragments.

3,892,564

DENTAL ALLOYS

John Sidney Hatswell, and Mieczyslaw Herman Sloboda, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Oct. 2, 1973, Ser. No. 402,778

Claims priority, application United Kingdom, Oct. 3, 1972, 45543/72

Int. Cl.[2] C22C *5/02*

U.S. Cl. 75—165 13 Claims

1. An alloy containing, apart from impurities, 5 to 10 wt percent gallium, 3 to 15 wt percent copper, 0 to 6 wt percent zinc, 0 to 19 wt percent silver and 75 to 95 wt percent gold.

3,892,565

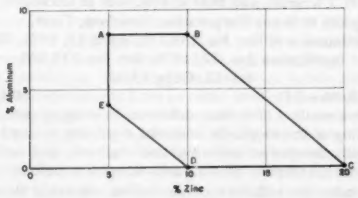
MAGNESIUM ALLOY FOR DIE CASTING

George S. Foerster, Monmouth Junction, and Charles D. Statham, Trenton, both of N.J., assignors to N L Industries, Incorporated, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,019

Int. Cl. C22c *23/00*

U.S. Cl. 75—168 C 2 Claims



1. A die cast alloy of magnesium having good castability and improved creep extension, said alloy consisting of zinc, aluminum, copper, manganese, silicon and magnesium, said zinc and aluminum present in amounts which fall within the pentagon ABCDE in the accompaning drawing defined by the lines AB, BC, CD, DE and EA, said alloy also containing copper in amount from 0.6 percent to 6.0 percent, manganese in

amount from 0.05 percent to 3.0 percent, silicon in amount from 0.0 percent to 2.0 percent, the remainder magnesium, all of the percentages expressed on a weight basis.

3,892,566

ELECTROSTATIC PROCESS WHERE THE DEVELOPER IS THE PHOTOSENSITIVE MEDIUM

Alan J. Brock, and John D. Brock, both of North Adelaide, Australia, assignors to Repco Research Proprietary Limited, Dandenong, Australia

Filed Feb. 14, 1973, Ser. No. 332,396

Claims priority, application Australia, Feb. 18, 1972, 8003/72

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 C **14 Claims**

1. The method of producing images on a surface which comprises:

a. wetting and maintaining a film of photoconductive developer material on said surface, which developer comprises a carrier liquid with an electrical resistivity in excess of 10^6 ohm centimeter and a toner medium which can receive a charge from a corona but which charge is modified by light when and where the said toner medium is subjected to light whereby the electrical resistivity of the said toner medium varies in light and dark areas and thus varies in retention delay characteristics on the said surface when in a field,

b. exposing the said surface with the wet film of photoconductive toner thereon to a light image,

c. simultaneously directing a corona from an electrode remote of the said surface to the said surface to extend uniformly over the surface by using an electrode behind said surface whereby the light image and corona field exist simultaneously and on the same area of the said surface,

d. simultaneously terminating both the corona discharge and the light image,

e. fixing the said image so produced to said surface while under the influence of said corona discharge and light image, and

f. washing toner medium from the said surface where not firmly held to the said surface while maintaining dark conditions.

3,892,567

ELECTROSTATICALLY DEFORMABLE MATERIALS

Roger N. Ciccarelli, and Dale R. Ims, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 133,732, April 13, 1971. This application Jan. 22, 1973, Ser. No. 325,488

Int. Cl. G03g *13/00*

U.S. Cl. 96—1.1 **10 Claims**

5. In a method of surface deformation imaging comprising providing a thermoplastic material overlying a conductive substrate, imagewise exposing said material, and softening said material thereby allowing said material to deform imagewise under the influence of an applied electrical field, the improvement which comprises employing as a thermoplastic material a blend comprising a non-polar thermoplastic polymer and a thermoplastic polymer containing polar groups comprising the lithium salt of a carboxylic acid chemically associated therewith, the amount of said polymer containing polar groups blended with said non-polar polymer being such that the thermoplastic material contains from about 100 to 10,000 ppm lithium.

3,892,568

ELECTROPHORETIC IMAGE REPRODUCTION PROCESS

Isao Ota, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 17, 1970, Ser. No. 29,414

Claims priority, application Japan, Apr. 23, 1969, 44-31600; June 12, 1969, 44-46698; June 12, 1969, 44-46700; Apr. 23, 1969, 44-31601; June 12, 1969, 44-46699; June 12, 1969, 44-46701

Int. Cl. G03g *13/22*

U.S. Cl. 96—1.3 **17 Claims**

1. An electrophoretic image reproduction process which comprises: uniformly applying a D.C. voltage to an electrophoretic suspension layer, said suspension layer being selected from the group consisting of (1) a suspension including at least one electrophoretic material suspended in a colored suspending medium which is capable of hiding said at least one electrophophoretic materials, (2) a suspension including at least one electrophoretic material suspended in a suspending medium having further a colored material forming a porous layer therein which is porous to said at least one electrophoretic material and is capable of hiding said at least one electrophoretic material, (3) a suspension including at least two electrophoretic materials suspended in a suspending medium, one of said at least two electrophoretic materials differing in charge polarity and color from the other electrophoretic material and being capable of hiding the other electrophoretic material, (4) and a suspension including at least two electrophoretic materials suspended in a suspending medium, one of said at least two electrophoretic materials differing in electrophoretic mobility and color from the other electrophoretic material and being capable of hiding the other electrophoretic material, the average size of said electrophoretic material in each of said suspensions being from 0.1 to 50 microns, whereby said D.C. voltage changes the optical reflective color of said electrophoretic suspension layer; and applying an electric field in a given image to said changed electrophoretic suspension layer, whereby said electrophoretic material struck by said electric field moves electrophoretically in accordance with the direction of said electric field and reproduces said given image on said electrophoretic suspension layer.

3,892,569

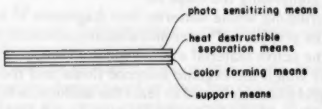
PHOTOSENSITIVE SHEETS COMPRISING ORGANIC DYES AND SENSITIZERS

Daniel E. Speers, Westport, Conn., assignor to General Film Development Corporation, Southport, Conn.

Filed Dec. 4, 1972, Ser. No. 312,216

Int. Cl. G03c *1/76, 3/00, 1/72*

U.S. Cl. 96—67 **9 Claims**



1. An ordinarily light stable copy sheet capable of being rendered sensitive to light upon heating above a predetermined threshold temperature comprising a support means having thereon a coating including a photo-sensitizable color forming organic dye insensitive to light at ambient temperatures without a sensitizing means but sensitive to light at ambient temperatures with a sensitizing means, a sensitizing means selected so as to be capable of sensitizing said color forming organic dye only upon the application of heat to the copy sheet, said sensitizing means being physically kept from effective contact with the color forming organic dye until the application of the heat to the copy sheet by a physical segregation means which is heat destructible at the threshold temperature

and a desensitizing means for rendering the copy sheet light stable upon an application of heat greater than that necessary for sensitization.

3,892,570

LIGHT ACTIVATING IMAGING PROCESS

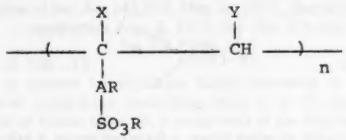
Alan R. Monahan, East Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 245,276, April 18, 1972. This application May 29, 1974, Ser. No. 474,272

Int. Cl. G03c *1/76*

U.S. Cl. 96—67 **2 Claims**

1. A projection member comprising a support substrate having coated on the surface thereof a uniform layer of the alkyl esters of polyvinylaryl sulfonic acids containing photoinsoluble areas in imagewise configuration, said esters satisfying the formula:



wherein R may be any straight or branched chain alkyl group including halogen substituted groups up to and including 10 carbon atoms;

wherein *n* is an integer having a value of from 10 to infinity; X and/or Y are hydrogen, halogen, alkyl or halogen substituted alkyl groups;

wherein Ar may be any polynuclear aromatic fused ring hydrocarbon up to and including 5 benzene rings.

3,892,571

PHOTOMASKS

Vasil Dragomirov Simeonov; Borislav Dimitrov Mednikarov, and Jordan Petrov Malinowski, all of Sofia, Bulgaria, assignors to Zlafop Pri Ban of Bulgaria, Bulgaria

Filed July 5, 1973, Ser. No. 376,712

Claims priority, application Bulgaria, July 17, 1972, 20980

Int. Cl. G03c *1/76, 5/00*

U.S. Cl. 96—68 **20 Claims**

1. A photographic material for use in the direct production of photomasks which photographic material comprises:

i. a glass substrate;

ii. a layer of metal or metal oxide selected from the group consisting of nickel, chromium, Nichrome and iron oxide deposited on said glass substrate;

iii. a photoresist deposited on said layer of metal or metal oxide;

iv. a layer of phenol-formaldehyde resin deposited on said photoresist; and

v. a layer of optically homogenous light-sensitive silver halide from 0.1 to 1 micron thick deposited by evaporation on the synthetic resin.

3,892,572

MULTILAYER COLOR PHOTOGRAPHIC MATERIAL

Keisuke Shiba, and Takeshi Hirose, both of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

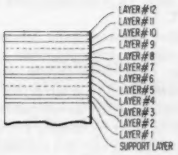
Filed July 1, 1974, Ser. No. 484,742

Claims priority, application Japan, June 29, 1973, 48-73445

Int. Cl. G03c *7/32, 1/02*

U.S. Cl. 96—74 **14 Claims**

1. A multilayer color photographic material suitable for high temperature development comprising a support having coated thereon at least one photosensitive emulsion layer containing an interlayer color correction coupler or an organic accelerator for the interlayer interimage effect, the multilayer color photographic material having a colloid layer for adsorbing an organic development inhibitor on the photosensitive emulsion layer or between the photosensitive emulsion layer and the support, said colloid layer containing silver halide grains which are substantially not developed by color development.



3,892,573

METHOD OF IMPROVING THE SURFACE OF A HIGH MOLECULAR WEIGHT SUPPORT

Sumitaka Tatsuta, and Wataru Ueno, both of Minama-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minama-Ashigara, Japan

Filed Dec. 22, 1971, Ser. No. 211,058

Claims priority, application Japan, Dec. 24, 1970, 45-11808

Int. Cl. B44d *5/02, 5/04*

U.S. Cl. 96—67 **16 Claims**

1. A method of improving the surface of a hydrophobic high molecular weight resinous support having a roughened surface which comprises contacting the surface with a liquid in which a hydrophilic resin is dissolved or dispersed while subjecting said liquid to ultrasonic vibrations.

3,892,574

CONTROLLED REDUCTION OF SILVER HALIDE GRAINS FORMED DURING PRECIPITATION

Frans Henri Claes, Edegem, Belgium; Eberhard Klein, Opladen, Germany; Marcel Jan Libeer, Mortsel, Belgium, and Erik Moisar, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

Filed Jan. 23, 1973, Ser. No. 326,126

Claims priority, application Germany, Jan. 26, 1972, 2203462

Int. Cl. G03c *1/28*

U.S. Cl. 96—107 **9 Claims**

1. In a process for the production of direct-positive photographic emulsions having silver halide grains of composite structure, the steps of first mixing components including a solution of a soluble halide salt and a soluble silver salt in the presence of an inert colloid to form a precipitate of a silver halide, chemically sensitizing the said silver halide and continuing precipitation to form an outer-shell of silver halide and finally fogging the surface of the outer-shell to form spontaneously developable fog nuclei wherein the improvement comprises precipitating the silver halide for the outer-shell at a pH of up to 9 and a pAg of up to 9.8 and subjecting the silver halide for the outer-shell during precipitation to a controlled reduction reaction by treatment with a reducing agent or light or by silver digestion to obtain silver halide grains in the silver halide emulsion of the outer-shell which silver halide grains contain silver nuclei which are not spontaneously developable without exposure to light upon treatment of a layer of said emulsion having a silver halide content corresponding to 3 g of silver nitrate per m^2 with a surface developer of the following composition:

p-Monomethylaminophenol	1.5	g
Sodium sulfite (anhydrous)	25.0	g
Hydroquinone	6.0	g
Sodium carbonate (anhydrous)	40.0	g
Water up to 1000 ml		

for a development time of 4 minutes and at a development temperature of 20°C.

8. A direct-positive photographic silver halide emulsion with silver halide grains having composite grain structure and consisting of a core of a silver halide which is chemically sensitized and an outer-shell of a silver halide the surface of which contains spontaneously developable fog wherein the said outer-shell is produced by mixing components including a solution of a soluble halide salt and a soluble silver salt in the presence of an inert colloid to precipitate the silver halide of the outer-shell onto the silver halide of the said core at a pH of up to 9 and a pAg of up to 9.8 and finally fogging the surface of the outer-shell to form spontaneously developable fog and wherein during precipitation the silver halide of the outer-shell is subjected to a controlled reduction reaction by treatment with a reducing agent or light or by silver digestion to form within the silver halide of the outer-shell silver nuclei which are not spontaneously developable without exposure to light upon treatment of a layer of said emulsion having a silver halide content corresponding to 3 g of silver nitrate per m^2 with a surface developer of the following composition:

p-Monomethylaminophenol sulfate	1.5	g
Sodium sulfite (anhydrous)	25.0	g
Hydroquinone	6.0	g
Sodium carbonate (anhydrous)	40.0	g
Water up to 1000 ml		

for a development time of 4 minutes and at a development temperature of 20°C.

3,892,575
METHOD OF MODIFYING THE SURFACE PROPERTIES OF A SUBSTRATE

Ronald E. Watts, and Louis A. Errede, both of Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 7, 1972, Ser. No. 312,954

Claims priority, application United Kingdom, Dec. 13, 1971, 057849/71

Int. Cl. B44d *1/50*

U.S. Cl. 96—84 R **6 Claims**

1. A process for modifying the surface properties of a substrate by bonding to said substrate a coating of a mixture of two modifying materials in an amount giving no more than negligible increase in weight and a final thickness of no more than about 0.1 μ comprising

A. coating said substrate with said mixture in which one modifying material is selected to provide finally desired surface properties and the other is selected to be readily bondable to said substrate under the influence of ultraviolet light and is present as an emulsion in a solution of the first said modifying material, drying said coating and

B. irradiating through said coating at a temperature of 60° to 180° C to the interface with said substrate with ultraviolet light of wavelength about 180 to 400 nm. for a time sufficient to give effective bonding of modifying material to said substrate without substantial degradation of the molecules of modifying materials or substrate.

3,892,576
PHOTOGRAPHIC WATER-INSOLUBLE COMPOUNDS HAVING A HYDROPHOBIC DIFFUSION-FAST SUBSTITUENT

Raphael Karel Van Poucke, Berchem, and Arthur Henri De Cat, Mortsel, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

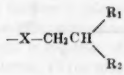
Filed Feb. 8, 1971, Ser. No. 113,646

Claims priority, application United Kingdom, Feb. 24, 1970, 8840/70

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **12 Claims**

1. Photographic material comprising a support, a light-sensitive silver halide emulsion layer on said support and a photographic water-insoluble component wherein said component is rendered fast to diffusion in hydrophilic colloid media by the presence in its molecule of a group corresponding to the formula:



wherein:

X represents an ether group, a thioether group, a sulphonyl group, a CONH group, an NHCO group, or an SO_2NH group, and

each of R_1 and R_2 represents a branched-chain C_4—C_{12} alkyl group.

3,892,577
WHITE PIGMENT EXCELLING IN RESISTANCE TO FLAME AND CORROSION

Yujiro Sugahara, Tokyo; Yoshibumi Noshi, and Hiroyuki Naito, both of Tsuruoka, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaishi, Osaka, Japan

Filed Nov. 23, 1971, Ser. No. 201,483

Int. Cl. C09d *5/08, 5/14;* **C23f** *11/18*

U.S. Cl. 106—14 **7 Claims**

1. A white pigment excelling in flame resistance as well as corrosion resistance, said white pigment consisting of a phosphate having the composition of the formula

$$M^1O_2 \cdot xY \cdot \left(0.1 \sim 1.5 + \frac{mx}{2}\right) P_2O_5$$

wherein

M^1 is an atom selected from the group consisting of silicon, titanium and zirconium,

Y is a member selected from the group consisting of a nitrogen-containing base selected from the group consisting of ammonia, urea, ammonium carbamate, guanyl urea, aminourea and biurea and an oxide of the formula $M^2O_{n/2}$

wherein M^2 is a metal selected from the group consisting of alkali metals, alkaline earth metals, aluminum, lead and zinc, and n is the valence of said metal M^2,

x is a positive number up to 6, including 0, and

m is 1 when Y is said nitrogen-containing base and is n when Y is M^2O_{n2};

said phosphate having a water solubility of 0.1–20 percent, said phosphate having a rate of aggregation of not more than 50 percent as defined by the following formula

$$Q = \frac{A - A'}{A} \times 100$$

wherein

A is the weight of powder passing through a sieve of 100-mesh size,

A' is the weight of this powder passing through the same sieve after standing for 24 hours at room temperature in air of relative humidity 90 percent, and

Q is the rate of aggregation in percent.

3,892,578

PHOSPHORUS CONTAINING VINYL ETHERS

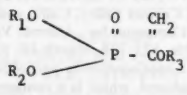
Peter Golborn, and James L. Dever, both of Lewiston, N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 142,075, May 10, 1971, abandoned. This application Aug. 7, 1972, Ser. No. 278,506

Int. Cl. C09k *3/28*

U.S. Cl. 106—16 **10 Claims**

1. A process for imparting flame resistance to a textile material comprising combining, from 5 to 40 percent by weight of textile material, a compound of the formula



wherein R_1, R_2 and R_3 are lower alkyl radicals independently containing from 1 to 8 carbon atoms, with a textile material selected from the group consisting of cellulosic material and proteinaceous material.

3,892,579

ADHESIVE REFRACTORY PROTECTIVE COMPOSITION FOR INVESTMENT CASTING

Curtis P. Mabie, Jr., Frederick, Md., assignor to American Dental Association, Chicago, Ill.

Filed Mar. 22, 1973, Ser. No. 343,856

Int. Cl.[2] B28B *7/34*

U.S. Cl. 106—38.3 **6 Claims**

1. An organic solvent dispersion useful in investment casting to secure preforms to a pattern comprising methylene chloride having dissolved therein zirconium octoate, said solution having dispersed therein very fine granules of a refractory material having a particle size predominately in the range of 2–5 microns mean diameter, said zirconium octoate comprising 20–40% by weight of the dispersion.

3,892,580

METHOD OF MAKING POROUS INORGANIC BODIES

Ralph A. Messing, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,964

Int. Cl. C03c *11/00*

U.S. Cl. 106—41 **6 Claims**

1. A method for producing porous bodies from Al_2O_3, TiO_2, ZrO_2, SiO_2, and mixtures thereof having pore diameters ranging between about 100A–1000A, wherein the skeletal density of the porous body approaches the theoretical density of the oxide and at least about 90 percent of the pores have pore diameters which fall within ± 10 percent of the average pore diameter value, which comprises:

a. forming a slurry consisting of particulate Al_2O_3, TiO_2, ZrO_2, SiO_2, and mixtures thereof, wherein the particle diameters thereof approximate the desired average pore diameter and range between about 100A–1000A, and a solution selected from the group consisting of acetic acid, propionic acid, magnesium acetate, zinc acetate, and sodium acetate;

b. drying said slurry; and

c. firing the dried material at about 450°–800°C.

3,892,581

GLASS FIBER COMPOSITIONS

Jerome A. Burgman, Murrysville; Edward M. Hunia, Pittsburgh, and Homer E. Neely, Jr., Tarentum, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 10, 1973, Ser. No. 395,791

Int. Cl. C03c *3/12*

U.S. Cl. 106—50 **9 Claims**

1. A glass fiber composition consisting essentially of 53 percent to 57.3 percent by weight as SiO_2, 16.3 percent to 18.5 percent by weight as Al_2O_3, 6.6 percent to 10.5 percent by weight as MgO, 8.5 percent to 12.7 percent by weight as CaO, 0.6 percent to 0.8 percent by weight as TiO_2, 2.0 percent to 4.1 percent by weight as B_2O_3, and 0.8 percent to 3.3 percent by weight as Na_2O having a tensile strength of greater than 570,000 pounds per square inch formed from a glass composition having a softening point below 1,650°F. and a liquidus temperature below 2,210°F.

3,892,582

PROCESS FOR CHANGING THE TINT OF A PHOTOCHROMIC MATERIAL AND MATERIAL FORMED THEREBY

Robert A. Simms, 449 Ithaca Rd., Horseheads, N.Y. 14845

Filed Feb. 1, 1974, Ser. No. 438,838

Int. Cl. C03c *3/20*

U.S. Cl. 106—52 **10 Claims**

1. A process for changing the tint of a photochromic inorganic silicate glass article containing microscopic particles of silver halide without adverse effect on photochromic properties which comprises the steps of heating the article to a temperature of at least about 300°C to about 600°C for a time from about 4 minutes to about 15 minutes in a reducing atmosphere having a free energy of formation greater that about 1½ to about 2 electron volts to permanently achieve the tint alteration.

3,892,583

PRODUCTION OF SHAPED ARTICLES OF SILICON CARBIDE AND SILICON NITRIDE

Gerhard Winter; Wolfgang Verbeek, and Manfred Mansmann, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 22, 1973, Ser. No. 390,450

Claims priority, application Germany, Sept. 5, 1972, 2243527

Int. Cl. C04b *35/52, 35/58*

U.S. Cl. 106—55 **8 Claims**

1. A process for the production of a shaped article comprising a homogeneous mixture of silicon carbide and silicon nitride comprising producing a silazane by reacting ammonia with at least one halogenosilane at a temperature of up to about 200°C, forming said silazane into a shaped article, and heating said shaped article to a temperature between about 800° and 2,000°C in an inert atmosphere, whereby said silazane decomposes into silicon carbide and silicon nitride.

3,892,584

MONOLITHIC REFRACTORY MATERIALS

Kenzo Takeda; Kazuhiko Takahashi, and Kunihiko Shiraishi, all of Osaka, Japan, assignors to Nippon Crucible Co., Ltd., Tokyo, Japan

Filed May 18, 1973, Ser. No. 361,724
Claims priority, application Japan, May 19, 1972, 47-49198
Int. Cl. C04b *35/10, 35/52, 35/56*
U.S. Cl. 106—56 **9 Claims**

1. Refractory materials for ramming and solid casting consisting essentially of 55–75 percent of an alumina material; 10–30 percent of silicon carbide and 5–20 percent of carbon, based on the total 100 wt percent, and 5–12 percent, based on the total weight of said alumina material, silicon carbide and carbon, of a chemical binder of a sol having a solids content of more than 5 percent by weight selected from the group consisting of a silica sol, an alumina sol and a mullite sol.

3,892,585

SEMI-SOLID COATING COMPOSITION

Masahiko Sagane, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Amagasaki and New Japan Chemical Co., Ltd., Kyoto, both of, Japan

Filed June 20, 1973, Ser. No. 371,575
Claims priority, application Japan, June 27, 1972, 47-06368
Int. Cl. C08b *27/42;* **C08h** *9/00;* **B01j** *13/00*
U.S. Cl. 106—187 **5 Claims**

1. In a coating composition which includes an organic fluid, film-forming material such as boiled oils; ready mixed paints based on boiled oils; natural resin varnishes and enamels; cellulosic clear lacquers and lacquer enamels; alkyd resin varnishes, paints and enamels; epoxy resin varnishes and enamels; acrylic resin varnishes and enamels; melamine-formaldehyde resin varnishes and enamels; polyurethane varnishes and enamels; and unsaturated polyester varnishes and enamels; the improvement comprising:

a thixotropy imparting material which is at least one member selected from the group consisting of hydrogenated castor oil and condensation products of a sugaralcohol with an aromatic aldehyde, said sugaralcohol being a member selected from the group consisting of pentahydric, hexahydric and heptahydric alcohols, said aromatic aldehyde being a member selected from the group consisting of benzaldehyde, ortho-, para- and meta-tolualdehyde, anisaldehyde and substituted benzaldehydes having 1 to 3 of amino groups, nitro groups or halogen atoms in their benzene nucleus;

said thixotropy imparting material being present in an amount ranging from 0.5 to 20 percent by weight;

said coating composition is a semi-solid, shapable mass which is fluidizable under shear and has a penetration value of not more than 2,000 and a viscosity of not more than 10^5 centipoises, at 25°C, respectively.

3,892,586

PROCESS FOR THE PREPARATION OF BUILDING UNITS

János Vládar; Ilona Vládar nee Szepes; Mihály Juhász; Peter Vládar, and Gábor Vládar, all of Budapest, Hungary, assignors to Licencia Talalmanyokat Ertekesito Vallalat, Budapest, Hungary

Filed Apr. 24, 1973, Ser. No. 354,146
Int. Cl. C08b *27/60*
U.S. Cl. 106—200 **20 Claims**

1. A process for preparing building units from cellulose-containing base materials and oil distillation residues, comprising mixing 15 to 85 % by weight of cellulose-containing base material with 1 to 20% by weight of a member selected from the group consisting of alkali metal ozide, alkali metal hydroxide, alkaline earth metal oxide, alkaline earth metal hydroxide and a mixture thereof, then adding 10 to 65% by weight of a 120° to 250°C. melt of oil distillation residue selected from the group consisting of bitumen having a softening point of about 80°C., black pitch and acid sludge and a mixture thereof to the obtained mixture at a temperature of 120° to 250°C., then mixing for at least one minute, and then shaping the obtained material at a temperature above 80°C.

3,892,587

METHOD FOR CONTROLLING THE VISCOSITY OF DISPERSED CLAY SLURRIES

William F. Abercrombie, Jr., Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Filed June 17, 1974, Ser. No. 479,719
Int. Cl. C08h *17/06;* **C09c** *1/42*
U.S. Cl. 106—288 B **6 Claims**

1. A method for controlling and maintaining the viscosity of an aqueous slurry of finely divided particulate clay pigments at a substantially uniform and low level, said method comprising the steps of forming an aqueous slurry of finely divided particulate clay pigments having a clay solids content in the range of from about 60 to 72% by weight and contacting said clay slurry with ascorbic acid in an amount in the range of from about 0.1 to 5.0 pounds acid per ton of said clay pigments, based on the dry weight of said clay pigments.

3,892,588

METHOD OF KILLING ROOTS AND ORGANIC GROWTHS IN SEWER PIPES

Frederick F. Horne, Carmel Valley, Calif., assignor to Airrigation Engineering Company, Inc., Carmel Valley, Calif.

Division of Ser. No. 122,738, March 10, 1971, Pat. No. 3,741,807, which is a continuation-in-part of Ser. No. 850,321, Aug. 6, 1969, abandoned, which is a continuation-in-part of Ser. No. 760,822, Sept. 19, 1968, abandoned. This application Apr. 30, 1973, Ser. No. 355,761
Int. Cl. B08b *9/02*
U.S. Cl. 134—24 **5 Claims**

1. A method for treating sewer pipes and the like for killing roots and other organic materials therein and keeping the pipes relatively clear and clean, comprising

temporarily plugging a sewer pipe,

filling the pipe upstream from the temporary plug with an aqueous solution containing a mixture, in an effective amount sufficient to kill such roots and organic materials, of phytocidal fumigant and nonionic surfactant,

soaking the pipe and its organic contents with the solution for an effective time interval sufficient to kill such roots and organic materials, and

unplugging the pipe and letting the solution flow on.

3,892,589

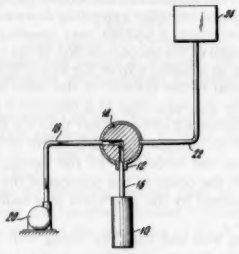
SEALED BATTERY CONSTRUCTION

Martin G. Rosansky, Monsey, and Bruce E. Jagid, Whitestone, both of N.Y., assignors to Power Conversion, Inc., Mount Vernon, N.Y.

Division of Ser. No. 203,976, Dec. 2, 1971, Pat. No. 3,748,186. This application Apr. 24, 1973, Ser. No. 353,961
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 LN **1 Claim**

1. A non-aqueous electric current-producing cell comprising a sealed battery casing containing a negative electrode made from a material selected from the group consisting of alkali metals and alkaline earth metals, a positive electrode, a separator for insulating the electrodes from each other, a liquid electrolyte that expands substantially when heated, including SO_2 in the form of an anhydrous liquid mixed with a cosolvent of at least one anhydrous liquid organic compound that is inert with respect to the negative electrode, and a

predetermined quantity of dry air that does not react with other components of the cell whereby the liquid electrolyte is



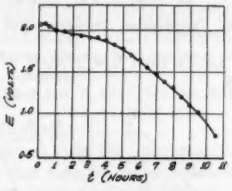
permitted to expand without escaping from the sealed casing by compressing the dry air.

3,892,590

CATHODE MATERIAL FOR USE IN NON-AQUEOUS ELECTROLYTES

Ronald G. Gunther, Mystic, Conn., assignor to Yardney International Corporation, Los Angeles, Calif.

Filed July 16, 1973, Ser. No. 379,257
Int. Cl. H01m *13/02, 17/00*
U.S. Cl. 136—83 R **7 Claims**



1. In a primary cell comprising (a) a negative electrode having as the active material an electrochemically active metal and (b) a non-aqueous electrolyte, the improvement which comprises: a positive electrode having as its principal active material a fluorinated carbon represented by the formula $(CF_x)_n$, where x has a value greater than 1 but not greater than 2 and n is an indefinite large number.

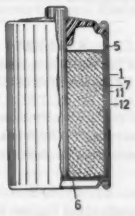
3,892,591

DRY CELL AND MANUFACTURE OF THE SAME

Yoshio Uetani; Rokurou Ikebata; Kentaro Kashiwaya; Syoetsu Sugihara, and Kaoru Hisatomi, all of Ibaraki, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Feb. 20, 1973, Ser. No. 333,709
Claims priority, application Japan, Dec. 7, 1972, 47-12314
Int. Cl. H01m *3/02*
U.S. Cl. 136—102 **17 Claims**

1. A dry cell containing a zinc anode, a depolarizer and a separator disposed therebetween, said separator being composed of a base paper comprising a layer of very fine paper having a thickness of at least about 10 microns and a density of about 0.65 to 0.85 g/cm³, the side of said base paper facing



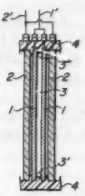
the zinc anode being coated with a paste material, and the opposite and uncoated side thereof facing the depolarizer.

3,892,592

METHOD OF MANUFACTURING ELECTRODES FOR FUEL CELLS

Masataro Fukuda, Takatsuki, and Tsutomu Iwaki, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation-in-part of Ser. No. 146,126, May 24, 1971, abandoned, which is a continuation of Ser. No. 794,157, Jan. 27, 1969, abandoned. This application Oct. 23, 1973, Ser. No. 408,560
Claims priority, application Japan, Jan. 31, 1968, 43-6320; Sept. 19, 1968, 43-68981; Sept. 20, 1968, 43-69028
Int. Cl. H01m *27/10*
U.S. Cl. 136—120 FC **16 Claims**



1. A method of manufacturing fuel electrodes for fuel cells which carry a catalyst comprising a layer of a mixture of copper and nickel, and at least one metal selected from the platinum group consisting of palladium, platinum, iridium and rhodium and carried by said mixture layer; said method comprising the steps of reducing a mixture of salts of copper and nickel onto an electrode substrate by means of a chemical reducing agent to produce said layer of said mixture on said substrate, and immersing the resulting electrode substrate into a solution of a salt of the metal of the platinum group to deposit said metal of the platinum group onto the surface of the said layer on said substrate due to differences in oxidation potentials between said platinum group metal and said mixture layer.

3,892,593

ALKALINE CELLS

Mitsuru Ieki, Daito; Kenji Inoue, Hirakata, and Toshio Shimizu, Daito, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 5, 1973, Ser. No. 367,130
Claims priority, application Japan, June 20, 1972, 47-62224
Int. Cl. H01m *1/02*
U.S. Cl. 136—133 **6 Claims**

1. An alkaline cell comprising a metal case containing electricity-generating elements therein, a metal sealing plate sealing the open end of said case, and an insulating gasket inter-

posed between the open end of said case and said sealing plate, said gasket being made of a resin composition comprising a halogenated butyl rubber as the main constituent and a styrenic resin and a phenolic resin incorporated therein.

3,892,594
PROCESS OF MAKING A SELF CONTAINED ELECTRODE SEPARATOR FOR PRIMARY AND SECONDARY ELECTROLYTIC CELLS

Arthur Charlesby; Peter John Fydelor, both of Swindon, and Adele Patricia Morris, New Malden, all of England, assignors to National Research Development Corporation, London, England

Filed Dec. 22, 1970, Ser. No. 100,828

Claims priority, application United Kingdom, Dec. 22, 1969, 62234/69

Int. Cl. H01m *3/00*

U.S. Cl. 136—148 **22 Claims**

1. A process for the production of an electrode encapsulated in a selectively semi-permeable membrane for an electrolytic cell comprising the steps of

a. totally encapsulating the electrolytic cell electrode in a base polymer,

b. immersing the encapsulated electrode of step (a) in an ethylenically unsaturated carboxylic acid monomer selected from the group consisting of acrylic acid and its lower alkyl homologues, and

c. causing the monomer of step (b) to copolymerize with the base polymer of step (a) while the base polymer and the monomere encapsulate the electrolytic cell electrode, whereby an electrode for an electrolytic cell totally enclosed in a encapsulating selectively semi-permeable membrane is produced.

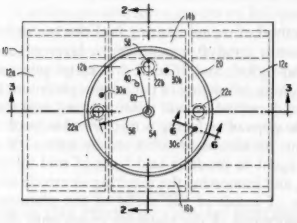
3,892,595
STORAGE BATTERY WITH SINGLE FILL VALVE

James E. Bell, Canoga Park, Calif., and Robert P. Laczko, Cuyahoga, Ohio, assignors to ESB Incorporated, Philadelphia, Pa.

Filed Apr. 5, 1974, Ser. No. 458,108

Int. Cl. H01m *1/02*

U.S. Cl. 136—162 **8 Claims**



1. A storage battery including a container with a first end cell compartment, a second end cell compartment and at least a center cell compartment located between the end cells, a cell element including positive plates, negative plates, separators and electrolyte located in each compartment; a single cover fastened to the container the single cover having a first section closing the first end cell compartment, a second section closing the center cell compartment and a third section closing the second end cell compartment; a disc valve rotatable about an axis perpendicular to the cover, located upon and in contact with the cover, areas of the disc covering selected positions of the three sections of the cover; a first filling well located in the portion of the first section of the cover covered by the valve disc, at a distance *a* from the axis of the disc, the first filling well including a first dependent collar extending downwards from the underside of the cover, a first vent opening through the cover in the portion of the first section of the cover covered by the disc valve at a radius *a* from the axis of the disc; a second filling well located in the portion of the second section of the cover covered by the valve disc, at a distance *b* from the axis of the disc the distance *b* being less than the distance *a*, the second filling well including a second dependent collar extending downwards from the underside of the cover, a second vent opening through the cover in the portion of the second section of the cover covered by the disc valve at a radius *b* from the axis of the disc; a third filling well located in the portion of the third section of the cover covered by the valve disc at a distance *c* from the axis of the disc the distance *c* being greater than the distance *b*, the third filling well including a third dependent collar extending downwards from the underside of the cover, a third vent opening through the cover in the portion of the third section of the cover covered by the disc valve at a radius *c* from the axis of the disc;

the first filling well and the third filling well being located on a straight line passing through the axis of the disc valve, the first vent opening and the third vent opening being located on a straight line passing through the axis of the disc;

the disc further including a first access hole, a second access hole and a third access hole therethrough the location of the holes being such that when the valve disc is in a first position the first filling well is exposed through the first hole in the disc, the second filling well is exposed through the second hole and the third filling well is exposed through the third hole and when the disc is in a second position, the first vent opening is opened by the first hole, the second vent opening is opened by the second hole and the third vent opening is opened by the third hole.

3,892,596
UTILIZING ION IMPLANTATION IN COMBINATION WITH DIFFUSION TECHNIQUES

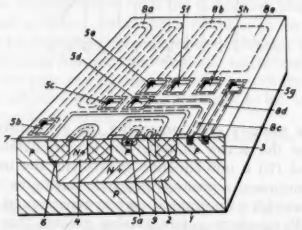
Fritz Lars Gunnar Bjorklund, Tyreso, and Eva Matzner, Stockholm, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 25, 1973, Ser. No. 409,761

Claims priority, application Sweden, Nov. 9, 1972, 14522/72

Int. Cl. H01l *7/54, 27/02*

U.S. Cl. 148—1.5 **2 Claims**



1. The method of making an integrated circuit of at least one resistor and one transistor comprising the steps of providing a crystalline substrate of a first type of semi-conductor material having diffused into a first region of one surface thereof impurity atoms of a second type, epitaxially growing on said one surface a layer of said first type of semiconductor material, diffusing impurity atoms of second first type into a second region of said layer within said first region to such a depth to electrically contact said first region andinto a third region of said layer within said first region to a depth insufficient to electrically contact said first region, etching said epitaxially grown layer away in a first annular region surrounding said second region and a second annular region connected to said first annular region and surrounding said

third annular region, filling said annular regions with a high resistance material, and injecting a beam of impurity ions of a second type along a line in the surface of said epitaxially grown layer outside the area enclosed by said annular regions to form passive elements.

3,892,597

METHOD OF NITRIDING

Joseph A. Lincoln, and Joseph A. Riopelle, III, both of Toledo, Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 243,824, April 13, 1972, abandoned. This application Nov. 1, 1973, Ser. No. 411,850
Int. Cl. C23c *11/16*
U.S. Cl. 148—16.6 **1 Claim**

1. A process for nitriding ferrous parts to produce a thin compound layer of complex nitrides containing principally epsilon phase without the presence of Fe_4N comprising the steps of:

placing said parts in a furnace containing an atmosphere defined as a noncombustible carrier gas consisting essentially of 95–97 percent nitrogen, ½ to 1½ percent carbon monoxide and 2–4 percent hydrogen;

heating said parts to an approximate temperature of 1,000°F;

introducing ammonia gas to said carrier gas to form a nitriding atmosphere within the furnace, said nitriding atmosphere containing 5–25 percent ammonia gas by volume; maintaining the hydrogen gas in said nitriding atmosphere at a value no greater than 10 percent by volume in said nitriding atmosphere by introducing additional quantities of carrier gas while withdrawing portions of said nitriding atmosphere; and

subjecting said parts to said nitriding atmosphere for a period between ½ to 10 hours until a compound layer of approximately 0.0005 inch thickness and composed principally of epsilon phase exists at the surface of said parts.

3,892,598

COBALT-RARE EARTH MAGNETS COMPRISING SINTERED PRODUCTS BONDED WITH SOLID COBALT-RARE EARTH BONDING AGENTS

Donald L. Martin, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,126
Int. Cl. H01f *1/04*
U.S. Cl. 148—31.57 **2 Claims**

1. A cobalt-rare earth alloy permanent magnet having an area greater than 4 square inches and substantially uniform permanent magnet properties throughout, said magnet consisting essentially of a sintered product consisting essentially of at least two compacts bonded together by a magnetic bonding agent, each said compact being produced by providing a permanent magnet type alloy of cobalt and rare earth metal in particulate form having an average particle size up to about 10 microns, subjecting said particulate alloy to a magnetic field to align the particles along their easy axis of magnetization, and compressing said particulate alloy into a compact having a density of at least 70%, said sintered product being produced by depositing a layer of particles ranging in size up to 10 microns of a magnetic bonding agent on the bonding surface of one of said compacts substantially covering said surface with said agent, said agent being a solid at sintering temperature and consisting essentially of cobalt-rare earth alloy containing the rare earth component in an amount at least 5 atom % greater than that of the alloy of each said compact with the maximum amount of rare earth component being 55 atom %, contacting the bonding surface of the second compact with said deposited bonding agent substantially coextensively therewith, and sintering and bonding the resulting assembly at a temperature ranging from 900°C to 1250°C in an atmosphere in which it is substantially inert producing a solid sintered composite product having a density of at least 87%.

3,892,599

AIR-STABLE COMPACT OF COBALT-RARE EARTH ALLOY PARTICLES AND METHOD

John G. Smeggil, Elnora, and Richard J. Charles, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 372,690, June 22, 1973, Pat. No. 3,856,582. This application Mar. 14, 1974, Ser. No. 451,029
Int. Cl.² C04B *35/00;* **C23C** *11/00*
U.S. Cl. 148—31.57 **4 Claims**

1. An air-stable porous magnetic compact comprised of compacted cobalt-rare earth alloy particles, the exposed surfaces of said compacted alloy particles having a continuous adherent coating of metal which is interconnecting and which provides said compact with an effective barrier to the atmosphere, said magnetic compact being produced by a process for depositing a substantially interconnecting adherent coating of a metal having a melting point above 500°C on the exposed surfaces of pressed particles of cobalt-rare earth alloy without significantly deteriorating their permanent magnet properties producing a magnetically air-stable compact which comprises providing particles of cobalt-rare earth alloy having an average size up to about 10 microns, providing an organometallic compound which is a solid or liquid at room temperature and which at a temperature below 500°C decomposes and yields products of decomposition consisting of gaseous nonmetallic product and a metal vapor, admixing said organometallic compound and said particles of alloy to form a substantially intimate mixture, said organometallic compound being used in an amount which on decomposition produces the metal in an amount ranging from 1 to 5% by weight of said cobalt-rare earth alloy particles, pressing said mixture to form a green body, heating said green body in a substantially inert atmosphere which is a flowing atmosphere or a substantial vacuum at a temperature below 500°C and substantially completely decomposing said organometallic compound and producing said gaseous product of decomposition and metal vapor, said metal vapor depositing a substantially interconnecting continuous coating of metal having a melting point above 500°C on the exposed surfaces of said pressed particles substantially uniformly throughout said body and having no significant deteriorating effect on the magnetic properties of said alloy particles, said deposited metal supporting said particles and providing the resulting compact with an effective barrier to the atmosphere, said non-metallic gaseous product of decomposition diffusing away from said body leaving the resulting compact porous in an amount ranging from about 5 to 40 percent by volume of said compact.

3,892,600

ANNEALED COATED AIR-STABLE COBALT-RARE EARTH ALLOY PARTICLES

John G. Smeggil, Elnora, and Richard J. Charles, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 372,688, June 22, 1973, Pat. No. 3,856,581. This application Mar. 14, 1974, Ser. No. 451,028
Int. Cl.² C04B *35/00;* **C23C** *11/00*
U.S. Cl. 148—31.57 **4 Claims**

1. Annealed magnetically air-stable cobalt-rare earth alloy particles coated with a metal having a melting point above 500°C or an oxide of said metal and having an increased intrinsic coercive force for the manufacture of a permanent magnet, said annealed particles being produced by a process which comprises annealing the coated particles in an inert atmosphere or in a substantial vacuum or in air at a temperature ranging from about 50°C to 200°C for a period of time ranging from 30 minutes to 100 hours, said annealing increasing the intrinsic coercive force of said coated cobalt-rare earth alloy particles by at least 10 percent, said magnetically air-stable particles being produced by providing particles of cobalt-rare earth alloy having an average size up to about 10 microns, providing an organometallic compound which at a tempera-

ture below 500°C decomposes and yields products of decomposition consisting of gaseous non-metallic product and a metal vapor, placing said compound and said particles in a substantially inert atmosphere which is a flowing atmosphere or a substantial vacuum, heating said organometallic compound at a temperature below 500°C and substantially completely decomposing it and producing said gaseous product of decomposition and a metal vapor, contacting the resulting metal vapor with the cobalt-rare earth alloy particles depositing a coherent substantially uniform metal coating which at least envelops the particles providing an effective barrier to the atmosphere and which has no significant deteriorating effect on their magnetic properties and diffusing away the non-magnetic gaseous product of decomposition, said organometallic compound being used in an amount which on decomposition yields a partial pressure of metal vapor of at least 10^{-7} atmosphere and produces the metal in an amount ranging from 1 percent to 5 percent by weight of said cobalt-rare earth alloy particles and said deposited metal having a melting point above 500°C.

3,892,601

COATED AIR-STABLE COBALT-RARE EARTH ALLOY PARTICLES AND METHOD

John G. Smeggil, Elnora, and Richard J. Charles, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 372,691, June 22, 1973, Pat. No. 3,856,580. This application Mar. 14, 1974, Ser. No. 451,030
Int. Cl.[2] C04B *35/00;* **C23C** *11/00*
U.S. Cl. 148—31.57 **4 Claims**

1. An air-stable product for the manufacture of a permanent magnet, said product being comprised of particles of cobalt-rare earth alloy enveloped by a coating impervious to air, said coating being selected from the group consisting of a vapor-deposited metal having a melting point higher than 500°C or an oxide of said vapor-deposited metal, said product being produced by a process for coating a metal having a melting point above 500°C on cobalt-rare earth alloy particles without significantly deteriorating their permanent magnet properties producing magnetically air-stable particles which comprises providing particles of cobalt-rare earth alloy having an average size up to about 10 microns, providing an organometallic compound which at a temperature below 500°C decomposes and yields products of decomposition consisting of gaseous non-metallic product and a metal vapor, placing said compound and said particles in a substantially inert atmosphere which is a flowing atmosphere or a substantial vacuum, heating said organometallic compound at a temperature below 500°C and substantially completely decomposing it and producing said gaseous product of decomposition and a metal vapor, contacting the resulting metal vapor with the cobaltrare earth alloy particles depositing a coherent substantially uniform metal coating which at least envelops the particles providing an effective barrier to the atmosphere and which has no significant deteriorating effect on their magnetic properties and diffusing away the non-metallic gaseous products of decomposition, said organometallic compound being used in an amount which on decomposition yields a partial pressure of metal vapor of at least about 10^{-7} atmosphere and produces the metal in an amount ranging from 1 to 5% by weight of said cobalt-rare earth alloy particles and said deposited metal having a melting point above 500°C.

3,892,602

AS-WORKED, HEAT TREATED COLD-WORKABLE HYPOEUTECTOID STEEL

Helmut Kranenberg, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 242,473, April 10, 1972, Pat. No. 3,762,964. This application May 9, 1973, Ser. No. 358,751
Int. Cl. C22c *39/00;* **C21d** *7/14*
U.S. Cl. 148—36 **2 Claims**

1. A heat treated hypoeutectoid steel consisting essentially of about 0.30 to about 0.80% carbon and the remainder iron and incidental impurities characterized by having good formability and a microstructure comprising fine well-dispersed spheroidal carbides having a size of not more than 0.3 microns in a ferritic matrix, said ferritic matrix being free of lamellar carbides and having a grain size of about three microns to about ten microns.

3,892,603

METHOD OF MAKING MAGNETS

William R. Reid, Wollaston, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 1, 1971, Ser. No. 177,025
Int. Cl.[2] C21D *1/04*
U.S. Cl. 148—108 **1 Claim**

1. A method of making magnets of a size less than about .078 inch in diameter and less than about .020 inch in thickness comprising the steps of

forming a multitude of perforations of a size and shape corresponding to the size and shape of the magnets to be produced in a rigid sheet of material which will not contaminate the material of the magnets during fabrication;

placing the perforated sheet on the negatively polarized end of an electromagnet and electrically energizing the coil of the electromagnet;

filling said perforations with deposits of a powder mixture containing cobalt and samarium;

laying a flexible film over the sheet and deposits;

inserting the assembled sheet, deposits and film in a press;

applying fluid under pressure of up to 5 tons per square inch to the film to compact the deposits thereunder while continuing to electrically energize the electromagnet;

placing the sheet and compacted deposits in a sintering furnace;

applying heat of about 1,100°C to the compacted deposits to sinter same;

and removing the resultant individual magnets from the sheet.

3,892,604

METHOD OF PRODUCING NORMAL GRAIN GROWTH (110) [001] TEXTURED IRON-COBALT ALLOYS

Donald R. Thornburg, and Karl Foster, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 228,071, Feb. 22, 1972, Pat. No. 3,843,424. This application June 17, 1974, Ser. No. 480,075
Int. Cl. H01f *1/00*
U.S. Cl. 148—120 **11 Claims**

1. In the method of producing improved magnetic characteristics in iron-cobalt alloys, the steps comprising, melting a composition within the range between about 5% and about 35% cobalt, up to about 3% of an element which improves volume resistivity and the balance iron with incidental impurities and controlling the sulfur content thereof to a value of less than about 0.005%, hot working the alloy material at a temperature within the range between about 1000°C and about 1100°C to an intermediate gauge, subjecting the intermediate gauge material to an annealing treatment at a temperature within the range between about 600°C and 800°C, pickling, cold working the annealed material in one or more steps to a desired finish gauge, at least the last of said cold working steps effecting a reduction in cross sectional area of between about

40 and about 75% and thereafter annealing at a temperature within the range between about 800°C and the A_{c_1} temperature, said process being effective for producing a high grain volume of (110) [001] texture by primary recrystallization and normal grain growth.

3,892,605

METHOD OF PRODUCING PRIMARY RECRYSTALLIZED TEXTURED IRON ALLOY MEMBER HAVING AN OPEN GAMMA LOOP

Donald R. Thornburg, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 228,318, Feb. 22, 1972, abandoned, and Division of Ser. No. 312,681, Dec. 11, 1972, Pat. No. 3,849,212. This application July 17, 1974, Ser. No. 489,324

Int. Cl. H01f *1/00*

U.S. Cl. 148—120 **15 Claims**

1. In the process for producing (110)[001] texture in iron base alloys which are suitable for use as transformer core materials, the steps comprising melting a composition including up to 0.03% carbon, up to 1% manganese, from 0.3% to 4% of at least one of the volume resistivity improving elements selected from the group consisting of up to 2% silicon, up to 2% chromium, up to 3% cobalt the balance essentially iron with incidental impurities, casting the melt, hot working the casting at a temperature within the range between about 1000°C and 1100°C, cold working the hot worked material in two or more operations to finish gauge, the last cold working operation effecting a reduction in cross-area of between about 50% and about 75%, with an intermediate anneal interposed between each of said cold working operations, said intermediate anneal being at a temperature within the range between about 750°C and the Ac_1 temperature of the composition, and final annealing the finish gauge material at a temperature within the range between about 800°C and the Ac_1 temperature of the composition, the material exhibiting a preponderance of the grains having a (110)[001] orientation and primarily recrystallized and normal grain growth microstructure.

3,892,606

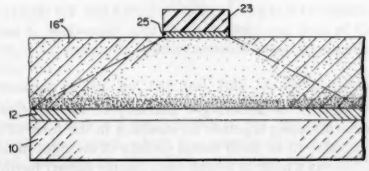
METHOD FOR FORMING SILICON CONDUCTIVE LAYERS UTILIZING DIFFERENTIAL ETCHING RATES

Ronald E. Chappelow, Pleasant Valley; Donald A. Doney, Poughkeepsie; Joseph Doulin, Newburgh; Paul T. Lin, Wappingers Falls, and Frank A. Schiavone, Marlboro, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1973, Ser. No. 374,425

Int. Cl. H01l *7/50, 29/78*

U.S. Cl. 148—174 **14 Claims**



1. A method for fabricating a silicon electrode atop a substrate, said electrode having a gradual slope at the sides thereof, so that the area encompassed by the electrode at the substrate is larger than the area at the opposite surface of said electrode, comprising the steps of:

varying the concentration gradient of boron dopant impurity of said silicon electrode such that the dopant concentration decreases from the substrate outward toward the opposite surface; and

etching said doped electrode in a mixture of HF, HNO_3 and acetic acid, the etch rate of said electrode material being a function of impurity concentration, thereby achieving said sloped pattern.

3,892,607

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

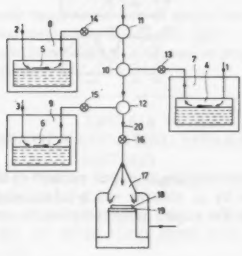
Franciscus Cornelis Eversteijn, and Hermanus Leonardus Peek, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 126,337, March 19, 1971, abandoned, which is a continuation of Ser. No. 718,564, April 3, 1968, abandoned. This application Dec. 15, 1972, Ser. No. 315,644

Claims priority, application Netherlands, Apr. 28, 1967, 6706005

Int. Cl. C23c *11/00*; **H01l** *7/00*

U.S. Cl. 148—186 **12 Claims**



1. A method of producing a device including a semiconductor body, said method comprising the steps of:

a. providing an oxysilane compound and a tri-alkyl aluminium compound, said oxysilane compound containing sufficient oxygen to oxidize the aluminum of said aluminum compound;

b. reacting in the gaseous phase said oxysilane compound and said tri-alkyl aluminum compound to produce aluminum silicate; and

c. depositing said aluminum silicate as a layer on a surface of said body.

3,892,608

METHOD FOR FILLING GROOVES AND MOATS USED ON SEMICONDUCTOR DEVICES

Gregory L. Kuhn, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Feb. 28, 1974, Ser. No. 446,834

Int. Cl.[2] H01L *7/34, 7/36, 7/50*

U.S. Cl. 148—188 **18 Claims**

1. A method for filling an evacuated space with an insulated filler on a substrate of the type which is able to withstand temperatures above 900°C, comprising the steps of:

providing a substrate having an upper surface and an evacuated space extending from said upper surface into the body of said substrate;

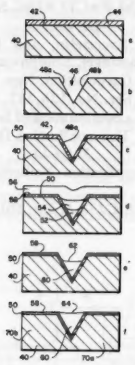
forming an insulating layer on said upper surface including said evacuated space;

forming a layer of P+ doped oxide on said surface including said evacuated space;

etchably removing said P+ doped oxide from said upper surface and leaving said P+ doped oxide within said evacuated space;

forming a layer of undoped polycrystalline silicon on said upper surface including said P+ doped oxide layer remaining within said evacuated space;

heating the resulting substrate to a temperature sufficient to drive the P+ doping impurities from said P+ doped oxide into a portion of the overlying layer of polycrystalline; and



etchably removing the undoped portion of the polycrystalline layer by an etchant which selectively stops etching when the P+ doped polycrystalline is reached by said etchant.

3,892,609

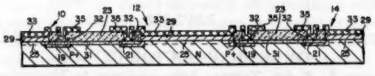
PRODUCTION OF MIS INTEGRATED DEVICES WITH HIGH INVERSION VOLTAGE TO THRESHOLD VOLTAGE RATIOS

Peter J. Coppen, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 187,255, Oct. 7, 1971, abandoned. This application June 24, 1974, Ser. No. 482,046

Int. Cl.[2] H01L 7/34

U.S. Cl. 148—188 **5 Claims**



1. A method of treating an MISFET device comprising the steps of:

a. forming directly on a surface of a first conductivity type semiconducting substrate first and second oxide layers respectively interfacing with first and second regions of said surface and respectively containing second and first conductivity type impurities, said first region being contiguously surrounded by said second region and itself including a pair of spaced apart areas between which said surface is free of both of said layers; and

b. raising the temperature of said substrate and of said layers thereon so as to diffuse the impurities from said first layer into said spaced apart areas, thereby forming second conductivity type source and drain regions therein and so as to simultaneously diffuse the impurities from said second layer into said surrounding second region, thereby forming increased first conductivity type field regions therein, without thereby doping said channel region.

3,892,610

FREEZE DRYING PROCESS OF MAKING ULTRA-FINE AMMONIUM PERCHLORATE AND PRODUCT

John R. Huzinec, Ridgeley, W. Va., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 8, 1973, Ser. No. 321,889

Int. Cl. C06b 19/02

U.S. Cl. 149—76 **9 Claims**

1. A process for preparation of ultra-fine ammonium perchlorate particles for incorporation as oxidizer into composite propellants comprising:

dissolving ammonium perchlorate in water to form an aqueous solution of ammonium perchlorate,

admixing said aqueous solution of ammonium perchlorate with an organic liquid immiscible with water and substantially a nonsolvent for ammonium perchlorate for the formation of an emulsion comprising said organic liquid as continuous phase and said aqueous solution as dispersed phase therein;

incorporating into the resulting admixture a branched chain hydroxy terminated polybutadiene (HTPB) having a molecular weight not exceeding about 2,500 as an emulsifier for the formation of said emulsion, and a diester of an alcohol having at least 2 carbon atoms in the molecule and a dicarboxylic acid having at least 3 carbon atoms in the molecule as a stabilizer for said emulsion, and agitating the resulting mixture of water, ammonium perchlorate, diester, and HTPB to form said emulsion,

freezing said emulsion,

subliming the said organic liquid and ice from the frozen emulsion, and

recovering residual fine ammonium perchlorate particles as product of the process.

3,892,611

INGOT MOULDS

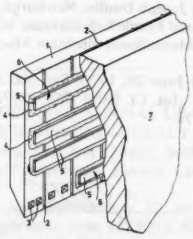
Peter Stanley Clark, and David John Bloodworth, both of Nechells, Birmingham, England, assignors to Foseco International Limited, Birmingham, England

Filed Mar. 23, 1973, Ser. No. 344,084

Claims priority, application United Kingdom, Mar. 23, 1972, 13702/72; Apr. 20, 1972, 18345/72

Int. Cl.[2] B22D 7/10

U.S. Cl. 156—71 **16 Claims**



1. A method of adhering a plurality of elements, which comprises adhering together an insulator in the form of a hot top lining slab to an inner metal surface of an ingot mould or a head box via a layer of a heat-vulcanisable rubber having the following properties:

a. a Mooney viscosity, after 4 minutes at 100°C of 24–70 units;

b. a torque after 1 minute at 160°C of 1–30 inch.lbs.;

c. a scorch time of not greater than 3 ½minutes;

d. a vulcanisation rate of 9–20 inch.lbs. per minute;

e. a time to 100% cure of 10–30 minutes, and

f. a quality level of 50–90 inch.lbs. WE CLAIM:

14. A method of adhering a hot top lining slab to an inner surface of an ingot mould or head box, which method com-

prises first priming the rear surface of the lining slab with a solution comprising a rubber and a tackifier; then extruding a plurality of strips of a heat-vulcanisable rubber having the following properties:

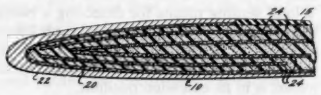
a. a Mooney viscosity, after 4 minutes at 100°C of 24–70 units;
b. a torque after 1 minute at 160°C of 1–30 inch.lbs.;
c. a scorch time of not greater than 3½ minutes;
d. a vulcanisation rate of 9–20 inch.lbs. per minute;
e. a time to 100% cure of 10–30 minutes, and
f. a quality level of 50–90 inch.lbs.

onto the primed surface while the primer is still wet; allowing the assembly to cure to give a rubber strip firmly adhered to the surface; and adhering the rubber strip to the inner surface of the ingot mould or head box with a tacky pressure sensitive material.

3,892,612
METHOD FOR FABRICATING FOREIGN OBJECT DAMAGE PROTECTION FOR ROTAR BLADES

Robert G. Carlson, Greenhills; Joseph H. Crawford, Cincinnati; Edward R. Farmer, Reading; Guy C. Murphy, Fairfield, and Charles T. Salemme, Madeira, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 159,111, July 2, 1971, Pat. No. 3,762,885.
This application Mar. 5, 1973, Ser. No. 338,156
Int. Cl. B63h *23/00, 25/00*
U.S. Cl. 156—150 **3 Claims**



1. A method of applying a protective metal coating to a non-conductive substrate comprising the steps of

incorporating a woven wire mesh into the substrate, as a surface layer, by means of a bonding agent which fills the interstices of the mesh and with the outer nubs of the wire mesh exposed

applying a thin conductive layer to the bonding agent in the interstices of the mesh with the mesh nubs free of said thin conductive layer and

electrolytically depositing a metal coat on the wire mesh/-conductive layer surface to obtain an essential even or uniform thickness with good adhesion obtained through the atomic bonds between the mesh nubs and the coated metal.

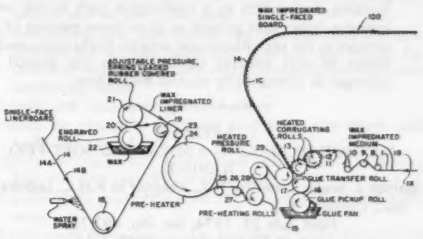
3,892,613
METHOD OF MAKING CORRUGATED PAPERBOARD

William S. McDonald, and Hugh B. Johnson, both of Georgetown, S.C., assignors to International Paper Company, New York, N.Y.

Continuation of Ser. No. 165,360, July 22, 1971, abandoned, which is a continuation of Ser. No. 7,419, Feb. 6, 1970, abandoned, which is a continuation of Ser. No. 616,756, Feb. 13, 1967, abandoned, which is a continuation-in-part of Ser. No. 475,786, July 29, 1965. This application July 2, 1974, Ser. No. 485,239
Int. Cl. B31f *1/20;* **B32b** *3/30*
U.S. Cl. 156—210 **13 Claims**

1. The method of manufacturing wax impregnated single face corrugated paperboard which comprises:

a. continuously supplying a web of corrugating medium;
b. moisture conditioning a first side of said corrugating medium;
c. impregnating the second side of said corrugating medium with wax;
d. heating said impregnated corrugating medium;
e. corrugating said impregnated corrugating medium;
f. applying an adhesive to the crests of said impregnated corrugated medium, said adhesive being applied to the crests of said impregnated corrugated medium on said first side of said medium;

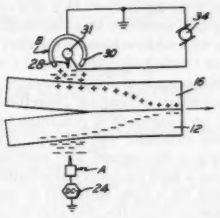


g. continuously supplying a web of single face linerboard;
h. heating said single face linerboard; and
i. securing said linerboard to said wax impregnated corrugated medium.

3,892,614
ELECTROSTATIC LAMINATING APPARATUS AND METHOD

Warren W. Levy, Cynwyd, Pa., assignor to The Simco Company, Inc., Lansdale, Pa.

Filed Mar. 8, 1973, Ser. No. 339,188
Int. Cl.[2] **B32B** *31/00;* **H05F** *3/00*
U.S. Cl. 156—272 **7 Claims**



1. Apparatus for electrostatically laminating two or more articles together, comprising:

means for juxtaposing a set of articles with respect to each other so that adjacent surfaces thereof are in close proximity,

first ionizing means for emitting ions of a single polarity and being adjacently spaced from one side of the set of juxtaposed articles so as to direct unipolar ions toward an outboard surface thereof,

second ionizing means for emitting ions of both polarities and being adjacently spaced from the other side of the set of juxtaposed articles, said second ionizing means being in confronting disposition with said first ionizing means and simultaneously directing positive and negative ions toward a discrete zone of an opposing outboard surface of said set of articles in juxtaposition with each other to effect pinning thereof while the pinned set is substantially neutral.

5. A method for electrostatically laminating two or more articles together comprising the steps of:

transporting the articles along a longitudinal path with a set of articles juxtaposed with each other in a direction substantially normal to the longitudinal path, and

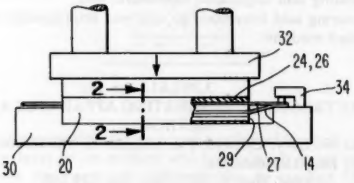
simultaneously passing the juxtaposed articles between a first ionizing device emitting unipolar ions and a second ionizing device emitting ions of both polarities toward a discrete zone, said first and second ionizing devices being adjacently spaced respectively from opposing sides of said juxtaposed set of articles and in confronting disposition with each other whereby the field of ions from each ionizing device acts as a conductive path to the other ionizing device and ground so as to cause pinning of the articles in the set without said articles being contacted by either of said ionizing devices while the pinned set emerges in substantially neutral disposition.

3,892,615

METHOD OF MAKING A SHEATHED SOFT-FEEL HANDLE

Marton J. Szabo, Camden, N.J., assignor to P.H.C. Industries, Inc., Camden, N.J.

Filed July 29, 1974, Ser. No. 492,711
Int. Cl.[2] B29C *19/04*; **H05B** *9/04*
U.S. Cl. 156—273 **6 Claims**



1. A method of making an elongated soft-feel handgrip for a handle construction comprised of placing an electrically conductive member against one face of a cushioning member, encompassing said members in a thermoplastic sheath which is coextensive with said cushioning member so that its longitudinal free ends overlap directly on said conductive member, said sheath being open at least at one of its ends with said conductive member extending therethrough, placing the sheathed unit on a conductive grounded bed and operatively connecting the extended end of said conductive member thereto, placing a die against said overlapped ends of said sheath, applying a high frequency alternating current between the die and bed for a time sufficient to seal said overlapped ends of said sheath dielectrically, said die acting to compress said cushioning member during the sealing operation and removing said conductive member through said one open end of said sheath after said overlapped longitudinal ends of said sheath have been sealed, said cushioning member expanding to occupy the space left by the removal of said conductive member to provide a tight soft-feel handle.

3,892,616

INDEX MEANS FOR TIRE-BUILDING APPARATUS

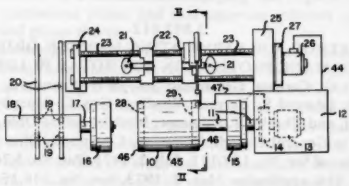
Robert G. Crites, Ravenna, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 233,695, March 10, 1972, abandoned. This application Apr. 5, 1974, Ser. No. 458,157
Int. Cl. B29h *17/20*
U.S. Cl. 156—352 **1 Claim**

1. In an apparatus for building pneumatic tires by juxtaposition of rubber impregnated, endless fabric carcass bands which apparatus comprises a collapsible rotatable cylindrical drum for supporting the carcass bands during the tire building, said drum having a first accessible band applying end portion and a second end portion opposite said first end portion, a bead setting mechanism positioned axially adjacent said end portion of the drum for pressing bead rings circumferentially into opposite edge portions of said carcass bands, and a stitching mechanism adjacent said drum for folding edge portions of the carcass bands over the end portions of the drum and the bead rings, the improvement comprising:

A. an index means disposed adjacent said second end portion of the drum for accurately positioning each carcass band applied to the collapsible drum; said index means adapted to move

1. along an axis substantially parallel to the axis of said drum and
2. along a path transverse to said axis of said drum between an inoperative retracted position and an operative extended position, said index means comprising
   a. a light source capable of producing a light beam to be broken by edge portions of each carcass band extending a predetermined distance axially beyond



said second end portion of said drum when said index means is in its extended position and

   b. a light sensing means for detecting a break in said light beam by edge portions of each carcass band extending a predetermined distance axially beyond said second end portion of said drum when said index means is in its extended position;

B. stopping means adapted for actuation by said light sensing means to stop rotation of the drum when said light sensing means detects a break in said light beam;

C. first means for the automatic and incremental movement of the index means axially of the drum by motive means according to a set of preset stop limits; and

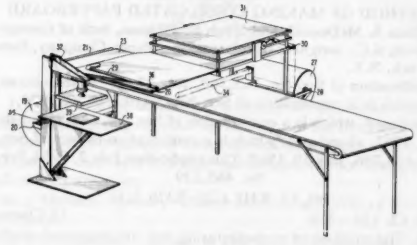
D. second means for automatic movement of the index means transversely of said drum according to a set of preset stop limits.

3,892,617

APPARATUS, PROCESS AND PRODUCT

Donald R. DePriest; Bobby C. Brandon, and Connell M. Buie, all of Columbus, Miss., assignors to Humboldt Products Corporation, Columbus, Miss.

Filed May 21, 1973, Ser. No. 362,451
Int. Cl.[2] B26D *5/00*
U.S. Cl. 156—353 **4 Claims**

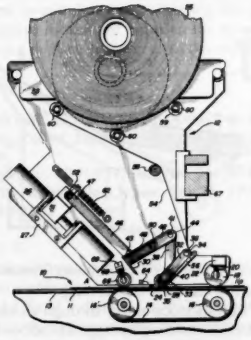


1. Apparatus for forming large, disposable complex specialty drapes having a T configuration with an abdominal cover section and a T section, the T section having at least two fenestrations at predetermined distances from one end

thereof, the abdominal cover section having a predetermined width and the T section having a predetermined length, the T section affixed to the abdominal cover section a predetermined distance from an end of the abdominal cover section; said apparatus comprising:

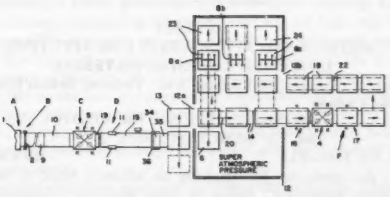
a. first holding means for holding a supply of abdominal cover section stock material;
b. means defining a first abdominal cover section work station;
c. second holding means for holding a supply of T section stock material;
d. means defining a first T section work station, including fenestrating means for producing at least two fenestrations in T section stock material positioned thereat;
e. means defining a second T section work station located to cause T section stock material positioned at the second T section work station to overlay abdominal cover section stock material positioned at the first abdominal cover section work station, the second T section work station including first cutting means for cutting T sections from T section stock material and further including first affixing means for affixing cut T sections to abdominal cover section stock material at the first abdominal cover section work station;
f. means defining a second abdominal cover section work station, including second cutting means for cutting completed large, disposable complex specialty drapes from abdominal cover section stock material having a T section affixed thereto;
g. second affixing means at one of said work stations for affixing a filter to at least one of the fenestrations;
h. drive means for advancing abdominal cover section stock material and T section stock material through their respective work stations in sequence; and
i. control means for controlling operation of said drive means, said fenestrating means, said first cutting means and said second cutting means.

3,892,618
TAPING MACHINE
Martin Griebat, 4315 N. New England, Harwood Heights, Ill. 60656
Filed June 21, 1973, Ser. No. 372,265
Int. Cl.[2] B26D *5/26;* **B32B** *31/04, 31/18*
U.S. Cl. 156—355 **7 Claims**



1. A machine for applying a predetermined length of transfer tape to an object surface, said machine comprising:
conveying means for conveying said object to which tape is to be applied to a surface;
synchronous sensing means for sensing the presence of said object to which tape is to be applied;
a laminating head disposable adjacent said object;
a roller arm having said laminating head disposed at a first end thereof including means for pivotally mounting the second end of said roller arm;
a connecting link, said connecting link attached at a first end thereof to said roller arm between said means for pivotably mounting second end of said roller arm and said laminating head;
a knife arm including a pivot shaft;
means for pivotably mounting said knife arm about said knife arm pivot shaft;
means for connecting said second end of said connecting link to a first end of said knife arm;
a knife blade projecting from the second end of said knife arm;
a tape guide chute mounted to the side of said roller arm for receiving said transfer tape and guiding same between said laminating head and said conveying means;
means for laminating said tape;
means, in cooperation with said synchronous sensing means, for moving said knife arm away from the surface of said conveyor means and for moving said knife arm towards the surface of said conveyor means, whereby when said synchronous sensing means senses the presence of an object to which tape is to be applied, said knife blade is moved away from the surface of said conveyor means and said knife arm pivots about said knife arm pivot shaft moving said first end of said knife arm toward the surface of said conveyor means, moving said connecting link toward the surface of said conveyor means and said roller arm in the same direction therewith, until said laminating head having an end of said roll of said transfer tape thereunder contacts the surface of said object to which transfer tape is to be applied moving on said conveyor means to thereby apply said transfer tape.

3,892,619
APPARATUS FOR MAKING LAMINATED PRESSED BOARD
Gerhard Hütz, Suchteln, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany
Continuation-in-part of Ser. No. 737,465, June 17, 1968, Pat. No. 3,576,692. This application Jan. 25, 1971, Ser. No. 109,198. The portion of the term of this patent subsequent to Apr. 27, 1988, has been disclaimed.
Int. Cl. B29j *5/00, 5/08*
U.S. Cl. 156—382 **7 Claims**



1. An apparatus for producing pressed board comprising:
means for forming a loosely coherent mat of comminuted material;
means for applying at least one lamina to said loosely coherent mat in a lamination zone;
means for excluding dust from said zone by maintaining same under superatmospheric pressure;
means for thereafter hot-pressing said loosely coherent mat and the lamina superposed thereon together between two

pressing surfaces to render the mat coherent and simultaneously bond said lamina thereto;

means for continuously depositing a first layer of relatively fine comminuted material;

means for continuously depositing a second layer of relatively coarse comminuted material on said first layer;

means for continuously depositing a third layer of relatively fine comminuted material on said second layer; and

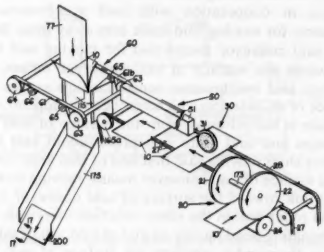
means for longitudinally subdividing the superposed continuous layers into individual mats, said lamina being applied to one of said layers of relatively fine material.

3,892,620

APPARATUS FOR FORMING ENVELOPES OF THERMOPLASTIC SHEET MATERIAL

William C. Heussy, Shedd, Oreg., assignor to Evans Products Company, Portland, Oreg.

Filed Jan. 7, 1974, Ser. No. 431,146
Int. Cl.[2] B31F *1/08*
U.S. Cl. 156—443 **10 Claims**



1. An apparatus for forming an envelope from an individual thermoplastic sheet comprising heating means for heating the sheet solely along a narrow, transverse zone constituting a predetermined fold line; folding means for folding the sheet along the heated zone, said folding means comprising a plow member, a pair of guide members, and means for imparting a reciprocating motion to the plow member to move said plow member from a position away from said guide membes to a position between said guide members to thereby fold said sheet about said plow member; heat-sealing means for heat-sealing the folded sheet along the lateral longitudinal edges thereof while said sheet is folded about said plow member; and means for conveying the sheet from said heating means to said folding means.

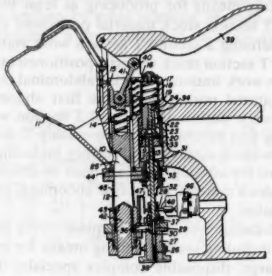
3,892,621

METHOD AND APPLICATION FOR APPLYING LIQUEFIED ADHESIVE MATERIAL

Albert R. Salonen, 560 Baxter Ave., Victoria, British Columbia, Canada

Filed Oct. 17, 1973, Ser. No. 407,319
Int. Cl.[2] B32B *31/00*; B35C *11/04*
U.S. Cl. 156—513 **19 Claims**

1. An applicator for applying an adhesive bond to fasten together overlapping layers of sheet material, comprising a body portion provided with a working face for placing against an outer surface of said layers, at least one member mounted protusibly in said face, a spring means mounted within said body portion, means for deflecting said spring means to impress mechanical energy therein, a releasable means for effecting releasable restraint of said spring means at a portion thereof to constrain the force acting on said portion when said spring means is deflected, a tripping means operatively associated with said releasable means for releasing said portion from said restraint when said spring means is deflected a predetermined amount; said portion, therefore, being operative to transfer said energy from said spring means to a means responsive to said force for impelling said member outwardly from said face so that said member is driven at a velocity into said surface to penetrate the material of said layers; said velocity being sufficient for the inertia-mass of said material to cause a counteractive force within said material against the thrust of said member thereby providing effective support to said layers during penetration thereof by said member, means for limiting said penetration to one or more outer layers of said material and to partial penetration of the last layer thereof, and means



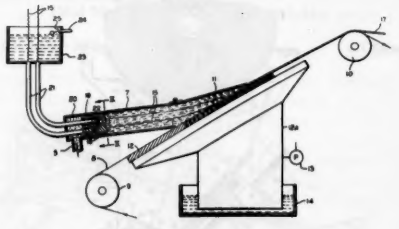
for injecting heated thermoplastic fluid into openings formed by said member to penetrate through the thickness of said outer layers and into said last layer and spread laterally at the interface therebetween; whereupon the heated fluid cools and hardens in place to provide fastenings securing said outer layers to said last layer; said injecting means including means for conveying heated thermoplastic fluid under pressure to a valve means which is operative to release a charge of said fluid into said openings subsequent to the penetrating thrust of said member.

3,892,622

INLAYING CONTINUOUS FILAMENTOUS REINFORCEMENT IN A NONWOVEN WEB

Borgeir Skaugen, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 5, 1973, Ser. No. 421,950
Int. Cl. D21f *1/00*, *11/00*
U.S. Cl. 162—108 **19 Claims**



1. A method of inlaying a continuous filamentous reinforcement in a nonwoven web, comprising:

supplying fibrous stock slurry through an elongated orifice into a stream traveling through a headbox to a web-forming porous traveling surface;

feeding filamentous reinforcement through a nozzle discharging downstream within the orifice and thereby into the slurry stream;

carrying the filamentous reinforcement in the slurry stream to the forming surface; and

on the forming surface forming the slurry into a web with the filamentous reinforcement integrally embedded in the web.

3,892,623

PROCESS FOR PRODUCING FIBROUS CEMENT SHEETS

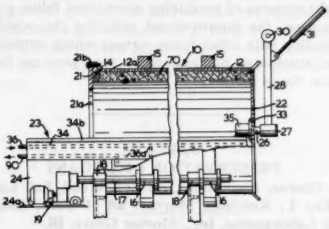
William C. Barratt, 595 Shepherd St., Niagara Falls, Ontario, Canada

Continuation-in-part of Ser. No. 166,778, July 28, 1971, abandoned. This application Apr. 20, 1973, Ser. No. 353,074

Claims priority, application Canada, July 31, 1970, 89700The portion of the term of this patent subsequent to Dec. 11, 1990, has been disclaimed.

Int. Cl. D21f *3/00*

U.S. Cl. 162—120 **7 Claims**



1. A process for producing a fibrereinforced cement sheet comprising the steps of:

a. feeding a cement mixture together with reinforcing fibres into a rotatable horizontal cylindrical mould,

b. spinning the mixture in the mould, distributing the mixture around the mound walls, and removing water therefrom, to form a soft, hollow cement cylinder,

c. inserting a cylindrical mandrel into the said cement cylinder to engage the inner surface of said cylinder,

d. sliding the cement cylinder from the mould without dimensional change by withdrawing said mandrel while holding said cylinder on the mandrel and supporting the inner surface of the soft cement cylinder by means of said mandrel,

e. dividing said cement cylinder longitudinally, and

f. progressively removing the cement cylinder from the mandrel as a sheet by initially placing one edge of the sheet on a receiving surface disposed beneath the mandrel and subsequently unrolling the cement sheet from the mandrel by simultaneously rotating the mandrel and causing relative movement between the mandrel and the said receiving surface transverse to the mandrel axis.

3,892,624

STEREOPHONIC SOUND REPRODUCING SYSTEM

Satoshi Shimada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

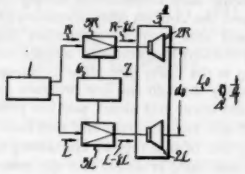
Filed Jan. 29, 1971, Ser. No. 110,854

Claims priority, application Japan, Feb. 3, 1970, 45-9819; Feb. 3, 1970, 45-9821

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 G **2 Claims**

1. A stereophonic sound reproducing system comprising first and second audio transducer means disposed in a common housing and fixed a distance $d_o = \lambda_o/2 \sin \theta$ apart from each other, where λ_o represents the wavelength of a component of the sound produced by said transducers, which wavelength substantially corresponds to the effective distance between the audio sensitive parts of both ears of listeners, and θ represents one-half of the angle between maximum sound pressure directions of difference sound components of right and left sounds produced by said first and second audio transducer means and which have said wavelength λ_o, a stereophonic sound signal source for generating right and left sound signals R and L, a combiner means for combining said right and left signals R and L to produce a combined right sound



signal $R-\gamma L$ and a combined left sound signal $L-\gamma R$, γ being a complex number coefficient, a first circuit means for feeding said combined right sound signal to said first audio transducer means and a second circuit means for feeding said combined left sound signal to said second audio transducer means.

3,892,625

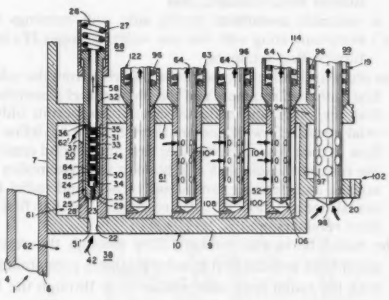
RADIAL BLANKET ASSEMBLY ORIFICING ARRANGEMENT

John F. Patterson, Richland, Wash., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 12, 1973, Ser. No. 406,519

Int. Cl.² G21C *15/04*

U.S. Cl. 176—50 **5 Claims**



1. In a nuclear reactor core (2) including core components, comprising a lower grid plate (9) with axial openings (22) therethrough separating zones (62 and 61) of high and low coolant (38) pressure, an upper grid plate 8 with axial openings therethrough in alignment with the openings in the lower grid plate, a plurality of tubular first, second and third retainers (30) in the low pressure zone depending vertically from the upper grid plate, depending vertically upon the lower grid plate, interposed between the two plates, and passing axially vertically upwardly through the upper grid plate in said low pressure zone;

said tubular first retainers having a top opening aligned axially with openings through the upper and lower grid plates, and the tubular first, second and third retainers containing specific core components (59, 18, 122 and 63) that are adapted to define coolant flows through their tubular retainers, all of said openings in said lower grid plate being axially aligned with said openings in said tubular first retainers;

the specific core components comprising a plurality of hollow, tubular, longitudinally, axially and vertically extending plugs (59) and restraint assemblies (18) supported by the tubular first retainers, reflector assemblies

(122) supported by the tubular second retainers, and blanket fuel assemblies (63) supported by the third tubular retainers;

the blanket fuel assemblies being replaceable and interchangeable with each other in the tubular third retainers; the specific core components having coolant inlet portions, and the coolant inlet portions (23 and 60) in the plugs and first restraint assemblies being disposed to receive coolant longitudinally axially, vertically from an opening in the lower grid plate to transport coolant in a flow axially through the low pressure zone between the upper and lower grid plates, said low pressure zone being divided into two separate and non-fluid communicating regions, one of said regions containing said tubular first, second and third retainers and the other of said regions containing all of the fissile fuel assemblies of the core;

the improved combination, comprising:

a. tubular first retainers having side wall openings (37) communicating with the low pressure zone between the grid plates for receiving and transporting a portion of said axially flowing coolant radially horizontally outwardly in a first direction;

b. tubular third retainers having side wall openings (37) communicating with the low pressure zone between the grid plates for receiving and transporting coolant flow radially horizontally inwardly in a second direction;

c. the second and third tubular retainers having drain holes (108) communicating with the low pressure zone between the grid plates;

d. blanket fuel assemblies having side wall openings (104) communicating with the low pressure zone between the grid plates for receiving and transporting coolant flow radially horizontally inwardly in said second direction and communicating with the side wall openings in the tubular third retainers; and

e. restraint assemblies having side wall openings (35) communicating with the side wall openings (37) in the tubular first retainers;

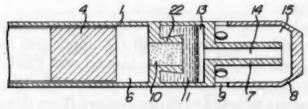
the plugs and reflector assemblies differing from the tubular first and third retainers and the blanket fuel assemblies in that the plugs and reflector assemblies permit only an axial vertical flow of coolant therethrough to define said flow in their respective tubular first and second retainers, the restraint assemblies and blanket fuel assemblies permitting and defining both axial vertical and radial horizontal coolant flow in their respective tubular first and third retainers, and

the radial horizontal outward flow through the restraint assemblies and the first tubular retainers communicating with the radial horizontal inward flow through the third tubular retainers and the blanket fuel assemblies.

3,892,626
VENTED NUCLEAR FUEL ELEMENT

Yasuo Hirose, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Dec. 14, 1971, Ser. No. 207,789
Claims priority, application Japan, Dec. 12, 1970, 45-111800
Int. Cl. G21c *3/02*
U.S. Cl. 176—68 **19 Claims**



1. A vented nuclear fuel element for nuclear reactors comprising a tubular cladding means for containing nuclear fuel and check valve means for venting gaseous fission products from said fuel to the exterior of the fuel element, said check valve means including porous means for passing gaseous fission products from the fuel, selective sealing means covering said porous means for passing said gaseous fission products passed from said porous means during operation of the fuel element and sealing said porous means during inoperation of said fuel element, and discharge means for discharging said gaseous fission products to the exterior of the fuel element, said selective sealing means being a material in a liquid state during operation of the fuel element and different from coolant surrounding the fuel element in the nuclear reactor.

3,892,627
FELINE PANLEUKOPENIA VACCINE

Robert W. Simons, and William M. Acree, both of White Hall, Ill., assignors to Rohm and Haas Company, Philadelphia, Pa.

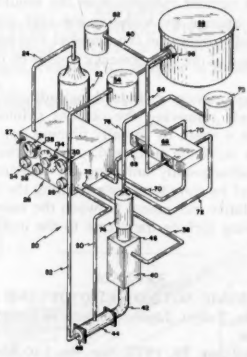
Filed June 4, 1973, Ser. No. 367,032
Int. Cl. C12k *7/00, 9/00*
U.S. Cl. 195—1.3 **6 Claims**

1. In the process of producing attenuated feline panleukopenia vaccine, the improvement reducing the possibility of contamination with other feline viruses which comprises culturing an attenuated panleukopenia seed virus on ferret cell suspension tissue culture.

3,892,628
PRESERVATION OF ORGANS

Gale H. Thorne, Bountiful; Orin Lew Wood, Salt Lake City, and Kay L. Knudson, Murray, all of Utah, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Division of Ser. No. 863,869, Oct. 6, 1969, Pat. No. 3,738,914.
This application Dec. 19, 1972, Ser. No. 316,612
Int. Cl. C12k *9/00*
U.S. Cl. 195—1.7 **6 Claims**



1. In a method of artificially perfusing a life organ which method includes delivery of perfusate to the organ the improvement of:

developing a pulsatile pressure in the perfusate delivered to the organ and imposing a minimum pressure bias on the delivered perfusate circulated through the organ between pressure pulses.

3,892,629
PROCESS FOR GROWING A FUNGUS

John Edward Smith, Bearsden, and John Galloway Anderson, East Kilbride, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 5, 1973, Ser. No. 329,338
Claims priority, application United Kingdom, Feb. 10, 1972, 6367/72
Int. Cl. C12b *1/20*; C12d *9/10*, *1/04*; C12k *1/00*
U.S. Cl. 195—36 R 14 Claims

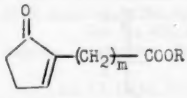
1. In an industrial process for growing a fungus belonging to a genus selected from the group consisting of Aspergillus, Penicillium, Cephalosporium, Zygorhyncus, Gliocladium, Fusarium, Helminthosporium, Paecilomyces and Cunninghamella upon an aqueous nutrient medium comprising a source of assimilable carbon and inorganic nutrients, the improvement which comprises the step of maintaining spores of the fungus at a temperature above that at which normal hyphal growth occurs but below that at which the spores remain dormant for a period of at least 10 hours during the incubation phase of their germination cycle thereby producing enlarged spores which produce less hyphal growth than normal spores.

3,892,630
PROCESS FOR PREPARING HYDROXYCYCLOPENTENONE DERIVATIVES USING MICROORGANISMS

Seizi Kurozumi; Takashi Toru, both of Hino, Sachio Ishimoto, Tokyo, all of Japan, assignors to Teijin Ltd., Osaka, Japan

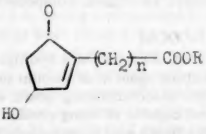
Filed May 24, 1974, Ser. No. 473,208
Claims priority, application Japan, May 28, 1973, 48-58537
Int. Cl. C07b *29/02*
U.S. Cl. 195—51 R 12 Claims

1. A process for preparing hydroxycyclopentenone derivatives, which comprises cultivating a microorganism belonging to the genus Aspergillus in a medium containing a cyclopentenone derivative expressed by the formula (1)



(1)

wherein R is a hydrogen atom or a lower alkyl group, and m is an integer of 1 to 6,
to form in said medium a hydroxycyclopentenone derivative expressed by the formula (2)



(2)

wherein R is the same as defined above, and n is equal to m, or $(m-2)$ when m is from 3 to 6,
and then recovering the hydrocyclopentenone derivative.

3,892,631
DIAGNOSTIC REAGENTS USED FOR THE DETERMINATION OF GAMMA-GLUTAMYL TRANSPEPTIDASE IN BIOLOGICAL FLUIDS

James J. Carroll, East Hanover, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

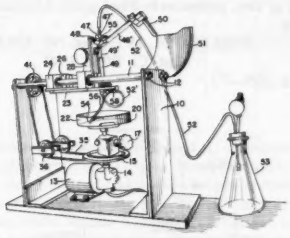
Division of Ser. No. 369,046, June 11, 1973, Pat. No. 3,878,048, which is a continuation-in-part of Ser. No. 282,632, Aug. 21, 1972, Pat. No. 3,769,173. This application Nov. 4, 1974, Ser. No. 520,752
Int. Cl. G01n *31/14*
U.S. Cl. 195—99 5 Claims

1. A diagnostic composition for the determination of gamma-glutamyl transpeptidase concentrations in biological fluids comprising an aqueous substrate solution containing:
A. at least about 45 micromoles of L-gamma-glutamyl-p-nitroanilide per milliliter of biological fluid;
B. at least 400 micromoles of glycylglycine per milliliter of biological fluid; and
C. at least 36.2 micromoles of sodium nitrite per milliliter of biological fluid;
said aqueous solution being buffered to maintain a pH of from about 7.9 to about 8.4.

3,892,632
METHOD AND APPARATUS FOR PLATING AND COUNTING AEROBIC BACTERIA

Jeptha E. Campbell, and James E. Gilchrist, both of Cincinnati, Ohio, assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Continuation-in-part of Ser. No. 149,137, June 2, 1971, Pat. No. 3,799,844. This application Mar. 14, 1974, Ser. No. 451,275
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R 9 Claims



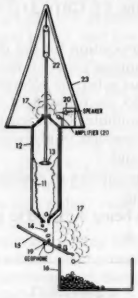
1. A method for determining the concentration of an unknown bacterial solution using only a single bacterial growth plate for the determination, comprising the steps of:
mounting a bacterial growth plate for rotation;
moving a dispenser of bacterial solution across the plate as the plate rotates so as to deposit the solution in a spiral configuration;
continuously depositing through the dispenser as it moves across the plate, a continuously varying but known amount of solution onto the plate such as to produce even distribution of the solution on said plate;
incubating the plate;
counting the bacteria colonies in a determinable area of the plate, and determining said determinable area; and
dividing the number of colonies counted by the volume of solution deposited in said determinable area, thereby calculating the concentration of the bacteria in the original bacterial solution.

3,892,633

COKE CUTTING WITH AID OF VIBRATION DETECTORS

Thaddeus J. Oleszko; Eduard P. Kaufmann, both of Burghausen, Germany, and Irvin D. Johnson, Englewood, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Feb. 12, 1973, Ser. No. 331,452
Int. Cl. C10b *47/00, 43/00*
U.S. Cl. 201—2 5 Claims



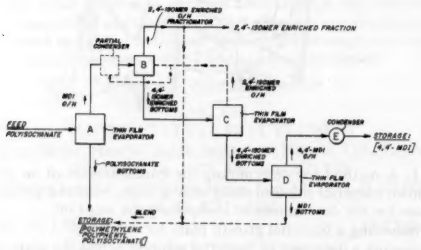
1. In a method to cutting coke from the drum of a delayed coker wherein the cut coke falls from the coke drum onto a surface, the improvement comprising the use of a sensing device contacting said surface to generate a signal indicative of the amount and size of the coke and controlling the rate of the coke cutting in response to said signal.

3,892,634

SEPARATION OF 2,4′ AND 4,4′ METHYLENE BIS(PHENYL ISOCYANATE) FROM POLYMETHYLENE POLYPHENYL POLYISOCYANATES

James D. Hajek, Houston, and Howard R. Steele, Baytown both of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 20, 1973, Ser. No. 334,048
Int. Cl. B01d *3/00*
U.S. Cl. 203—72 6 Claims



1. A continuous process for the partial removal of at least 98% pure 4,4′-methylenebis(phenyl isocyanate) from a feed mixture of polymethylene polyphenyl polyisocyanates, which mixture contains a major proportion by weight of methylenebis(phenyl isocyanate), comprising the steps of

a. subjecting said feed mixture in a continuous manner to a first partial distillation in a thin film evaporator under reduced pressure and continuously withdrawing from said thin film evaporator methylenebis(phenyl isocyanate) as overhead and polymethylene polyphenyl polyisocyanate as undistilled bottoms fraction;

b. continuously passing said overhead from said first partial distillation to a fractional distillation zone;

c. continuously removing an overhead fraction enriched in 2,4′-methylenebis(phenyl isocyanate) from said fractional distillation zone;

d. continuously passing the bottoms fraction from said fractional distillation zone as liquid feed to a second thin film evaporator wherein said feed is subjected to a second partial distillation under reduced pressure to recover a portion of said feed as overhead;

e. continuously returning said overhead fraction from said second partial distillation to said fractional distillation zone employed in the previous stage;

f. subjecting said undistilled bottoms from said second partial distillation to a third partial distillation under reduced pressure in a third thin film evaporator in a continuous manner and recovering at least 98% pure 4,4′-methylenebis(phenyl isocyanate) as overhead and methylenebis(phenyl isocyanate) residues as undistilled bottoms fraction, said overhead comprising the major proportion of the feed to said third thin film evaporator.

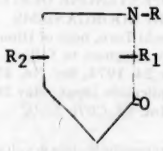
3,892,635

PRE-CONDITIONER AND PROCESS

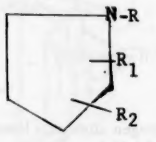
Charles D. Mallico, Stratford, Conn., assignor to Enthone, Incorporated, West Haven, Conn.

Division of Ser. No. 193,589, Oct. 28, 1971, Pat. No. 3,791,986. This application Aug. 31, 1973, Ser. No. 393,382
Int. Cl. B44d *1/092*
U.S. Cl. 204—15 8 Claims

1. A process for conditioning surfaces of an electrical insulating resin material which comprises pre-conditioning the object surface by contacting it with an acidic solution containing at least one five-membered saturated nitrogen heterocyclic compound of the formulae



wherein R is hydrogen or methyl, R_1 is hydrogen or methyl and R_2 is hydrogen or methyl, and



wherein R is hydrogen or methyl, R_1 is hydrogen or methyl and R_2 is hydrogen or methyl, an organic compound of the formula

RCOOM

wherein R is hydrogen or 1–6C alkyl and M is hydrogen or an alkali metal cation and a wetting agent in an amount sufficient to impart wettability to the preconditioning acidic solution until the surface is rendered capable of being conditioned by contacting the surface with a strong acid aqueous conditioning solution, and contacting the pre-conditioned article surface with a strong acid aqueous oxidizing conditioner solution until the surface is capable of having a chemical reduction metal plating process plating adhere firmly thereto.

3,892,636
METHOD FOR PRODUCING A COLORED OXIDE FILM ON AN ALUMINUM OR ALUMINUM ALLOY

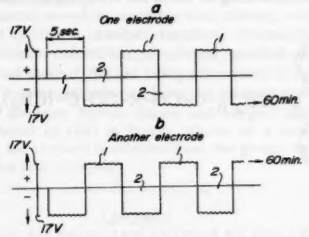
Kazuyoshi Kaneda; Yasushi Suzuki, both of Shizuoka, and Kenji Wada, Tokyo, all of Japan, assignors to Riken Light Metal Industries Co., Ltd., Shizuoka, Japan

Filed June 1, 1973, Ser. No. 366,207

Claims priority, application Japan, June 6, 1972, 47-55574; Nov. 13, 1972, 47-112868

Int. Cl. C23f *5/00*; **C23b** *9/02*

U.S. Cl. 204—35 N **5 Claims**



2. A method for producing colored oxide films on aluminum or an aluminum alloy which comprises arranging a pair of aluminum or aluminum alloy electrodes in an electrolytic bath containing a metal salt and passing between said electrodes a periodically reversing direct current, said current reversing direction at intervals of from 1 second to 5 minutes at not more than 70V.

3,892,637
METHOD OF TREATMENT OF METAL SURFACES

Jean-Loup Polti, LePetit Pont, 42450 Suryle Comtal, France

Continuation-in-part of Ser. No. 279,798, Aug. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 15,871, March 2, 1970, abandoned. This application Mar. 12, 1974, Ser. No. 450,282

Claims priority, application France, Mar. 10, 1969, 69.06596

Int. Cl. C23b *5/52*, *5/32*

U.S. Cl. 204—37 T **5 Claims**

1. A method of forming a hard and wear- resistant coating on a finished article made of a copper-based alloy, comprising electrodepositing on the surface of a said article a layer 8–15 microns thick of an alloy consisting essentially of tin containing 5–10 percent by weight antimony, said electrodeposition being conducted in an aqueous bath having a pH of about 2.5 to about 2.8, having a proportion of antimony ions to tin ions in the range from about 1.7:1 to 1.9:1, and having a cathodic current density of about 2 to about 8 amperes per square decimeter, and then heating said article to diffuse the metals of said layer and surface into each other.

2. A method as claimed in claim **1**, in which said bath contains about 18 to about 22 grams per liter of $SnCl_2$, about 30 to about 34 grams per liter of Sb_2O_3, about 125 to about 135 grams per liter of ammonium citrate, about 78 to about 85 milliliters per liter of hydrochloric acid, about 2 grams per liter of gelatin and about 4 grams per liter of salicylic acid.

3,892,638
ELECTROLYTE AND METHOD FOR ELECTRODEPOSITING RHODIUM-RUTHENIUM ALLOYS

Peter Stevens, Parsippany, and John M. Deuber, Nutley, both of N.J., assignors to Oxy Metal Industries Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 372,375, June 21, 1973, abandoned. This application July 29, 1974, Ser. No. 492,578

Int. Cl. C23b *5/32*

U.S. Cl. 204—43 N **7 Claims**

1. A substantially platinum-free aqueous acidic electroplating bath suitable for depositing a bright, low-stress rhodium alloy at a temperature of 60° – 180°F and a current density of 5 to 40 amps per square foot, the bath comprising 0.1 to 15 g/l of rhodium as a soluble compound and a compatible soluble ruthenium compound in a weight ratio of Rh:Ru of from 10 to 200:1.

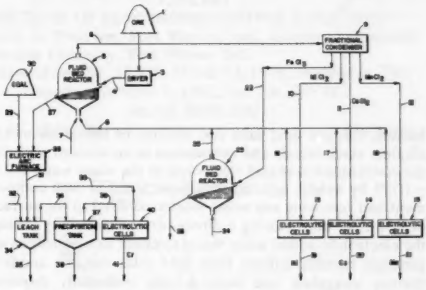
3,892,639
EXTRACTION OF METAL VALUES FROM LATERITIC ORES

Howard W. Leavenworth, Jr., Washington, D.C.; Earle B. Amey, Greenbelt, Md.; Beverly W. Dunning, Jr., Adelphi, Md.; Robert C. Gabler, Jr., Grasonville, Md., and Carl E. Goldsmith, Brandywine, Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sept. 11, 1974, Ser. No. 504,464

Int. Cl. C22d *1/14*, *1/24*

U.S. Cl. 204—105 M **11 Claims**



1. A method for the extraction of nickel, chromium and other metallic values from laterite ores which comprises chlorinating the ore in a fluidized bed with hydrogen chloride gas to form volatile metal chlorides of nickel and other metals except chromium; and a residue containing chromium, removing the volatile metal chlorides from the fluidized bed and condensing to recover the chlorides of nickel and the other metals; removing at least a portion of the chromite-containing residue from the fluidized bed reactor which contains chromium, reducing with carbon to form a carbide of chromium, leaching to form chromium salts, and recovering the chromium.

3,892,640
METHOD OF PURIFICATION OF WASTE WATER PRODUCED FROM THE PACKING OF MEAT AND AQUATIC ANIMALS

Motohiro Furuta, Abashiri, Japan, assignor to Zenkoku Reitogyoniku Kyokai, Hokkaido, Japan

Filed Mar. 27, 1973, Ser. No. 345,286

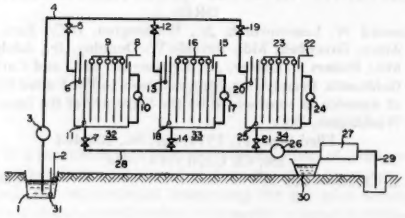
Claims priority, application Japan, Mar. 31, 1972, 47-31735

Int. Cl. B01k *3/00*; **C02b** *1/82*

U.S. Cl. 204—149 **4 Claims**

1. A method of purifying the contaminated waste water that is produced in the slaughter and processing of livestock and

aquatic animals and containing water-soluble colloidally dispersed materials selected from at least one of water soluble protein, visceral matter or blood, said method comprising passing said waste water through the compartments of at least one electrolytic tank containing a plurality of compartments, each compartment separated from the next adjacent compartment by an electrically insulated partitioning plate, each compartment containing at least one pair of electrode plates comprising a solid metallic anode selected from iron, stainless steel or aluminum and a cathode, adding to said waste water at least one electrolyte selected from the group consisting of the



halides, halogen acid salts and nitrates of the alkali metals, alkaline earth metals and ammonium in an amount such that the concentration of said electrolyte in the waste water is 0.03 – 1.7 % by weight, agitating the waste water in each compartment and removing any waste matter adhered to the surfaces of said electrodes passing a direct-current electricity through the electrolyte-added waste water to effect its electrolysis and generate metallic cations from said solid metallic anode to thereby coagulate said water-soluble colloidally dispersed materials selected from at least one of water soluble protein, visceral matter or blood and thereafter separating the precipitated solid matter from the waste water.

3,892,641

PROCESS FOR PRODUCING A COPOLYMER OF TETRAFLUOROETHYLENE AND PROPYLENE

Yoneho Tabata; Hiroshi Ukihashi, both of Tokyo, and Masaaki Yamabe, Yokohama, all of Japan, assignors to Japan Atomic Energy Research Institute and Asahi Glass Company, Japan

Continuation-in-part of Ser. No. 147,209, May 26, 1971, abandoned. This application Apr. 10, 1973, Ser. No. 349,680

Claims priority, application Japan, May 26, 1970, 45-44507

Int. Cl. C08f *1/16*

U.S. Cl. 204—159.22 **7 Claims**

1. A process for producing copolymer of tetrafluoroethylene and propylene which comprises copolymerizing tetrafluoroethylene and propylene with high energy ionizing radiation at a dose rate of 10^2 – 10^7 roentgens/hour in an aqueous emulsion, without a hydrocarbon liquid, consisting essentially of water, tetrafluoroethylene and propylene and a dispersing agent which is suitable for emulsifying tetrafluoroethylene and propylene and has no retarding action for the copolymerization reaction, wherein the reaction temperature is 5° to 80°C. and reaction pressure is 1 to 50 kg/cm².

3,892,642

PHOTO-CYCLOADDITION POLYMERIZATION OF BIS-NTHRACENES

Frans Carolus De Schrijver, Leuven, and Gerard Albert Delzenne, S-Gravenwezel, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

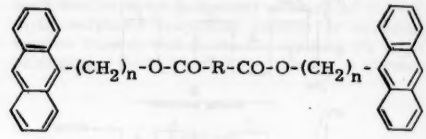
Division of Ser. No. 233,325, March 9, 1972, Pat. No. 3,807,999. This application Feb. 7, 1974, Ser. No. 440,503

Claims priority, application United Kingdom, Mar. 19, 1971, 7376/71

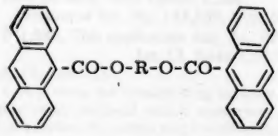
Int. Cl. B01j *1/10, 1/12*

U.S. Cl. 204—159.11 **2 Claims**

1. Process for the photo-cycloaddition polymerization of bis-anthracenes, which comprises exposing to ultraviolet radiation at about 365 nm in the absence of oxygen, bis-anthracenes corresponding to one of the following general formulae:



and



wherein R represents an alkylene group of two to 10 carbon atoms and *n* is 1 or 2.

3,892,643

THERMALLY CURABLE COMPOSITIONS AND PROCESS FOR CURING SAID COMPOSITIONS

Goro Tanaka, and Toshikazu Narahara, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 30, 1974, Ser. No. 465,586

Claims priority, application Japan, May 2, 1973, 48-48499; May 2, 1973, 48-48500

Int. Cl. B01j *1/10*

U.S. Cl. 204—159.13 **51 Claims**

1. A thermally curable composition comprising a silicon hydride compound having at least two hydrogen atoms bonded to silicon atom and (b) at least one isocyanuric acid compound selected from the group consisting of trialkenyl isocyanurates and derivatives thereof obtained by replacing one alkenyl group of a trialkenyl isocyanurate with an alkyl, silylalkyl or aryl group.

3,892,644

METHOD OF MAKING CERMET POWDERS

Richard J. Borg; David Y. F. Lai; Neil R. Riley, and James R. Wolfe, all of Livermore, Calif., assignors to California Metallurgical Industries Inc., Livermore, Calif.

Division of Ser. No. 44,608, June 8, 1970, Pat. No. 3,723,359. This application July 12, 1972, Ser. No. 271,004

Int. Cl. C22c *29/00*

U.S. Cl. 204—164 **12 Claims**

1. A process for preparing an intimately blended powder including as constituents:

I. at least one refractory compound selected from the group consisting of

a. carbides, nitrides, borides, oxides and silicides of titanium, tantalum, chromium, tungsten, hafnium, columbium, zirconium and molybdenum, and
b. silicon nitride, boron nitride, silicon carbide and boron carbide; and

II. at least one matrix metal in elemental form selected from the group consisting of iron, cobalt, nickel, copper, silver, gold and platinum;

comprising the step of forming a plasma containing the two separate constituents by striking a high intensity arc between a cathode and an anode, wherein the anode comprises a mixture of:

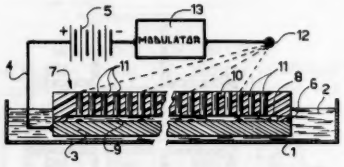
III. a material selected from the group consisting of titanium, tantalum, chromium, tungsten, hafnium, columbium, zirconium, molybdenum, boron, silicon, and compounds thereof; and
IV. the matrix metal or a compound thereof; when the material of (III) is titanium, tantalum, chromium, tungsten, hafnium, columbium, zirconium, molybdenum or a compound thereof, the arc being maintained in the presence of an element selected from the group consisting of carbon, nitrogen, boron, silicon and oxygen; and when the material of (III) is boron, silicon or a compound thereof, the element is selected from the group consisting of carbon and nitrogen.

3,892,645

PRINTING METHOD AND SYSTEM BY GELATIN COAGULATION

Adrien Castegnier, 325 Melbourne St., Mount Royal, Quebec, Canada

Filed June 6, 1973, Ser. No. 367,589
Int. Cl. B01k *1/00, 5/00, 5/02*
U.S. Cl. 204—180 R **13 Claims**



1. An electric reproduction printing method comprising interposing a thin layer of a composition in substantially liquid state containing water, an electrolyte, and an electrolytically coagulable colloid, between opposite negative and positive electrolytically inert electrode means, electrically and selectively biasing said opposite electrode means with direct current for a relatively short period of time and concurrently sweeping the positive electrode means by the negative electrode means to thereby cause point by point selective coagulation and adherence of colloid onto said positive electrode means, and removing the non-coagulated colloid, whereby the coagulated colloid is representative of a desired image.

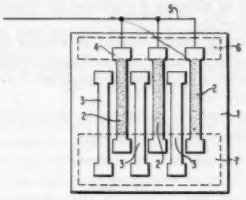
3,892,646

PROCESS FOR SELECTIVELY FORMING ELECTROPHORETIC COATINGS ON ELECTRICAL CONTACTS

Donald J. Lazzarini, Binghamton, and Lewis K. Schultz, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 17, 1970, Ser. No. 64,424
Int. Cl.[2] C25D *13/06, 13/12*
U.S. Cl. 204—181 **7 Claims**

1. In a process for forming a thin, insulative coating having good mechanical resistance to cracking and compression at elevated pressure, said process comprising immersing a plurality of metal electrical contacts carried on a backing in an electrophoretic coating composition, some of said metal electrical contacts being in electrical isolation from the source of electrical current, and some of said metal electrical contacts being connected to said source of electrical current, said metal electrical contacts comprising a plurality of longitudinally arranged, narrowly spaced members, and electrophoretically depositing said coating composition as a coating on said metal electrical contacts whereby a homogeneous, thin polymeric coating is formed only on said metal electrical contacts which are connected to said electrical current, the improvement according to which the electrophoretic coating composition comprises an aqueous polymeric blend of from 60 to 40 parts polyethylene ionomer and from 40 to 60 parts epoxy ester polyer, all parts being by weight.

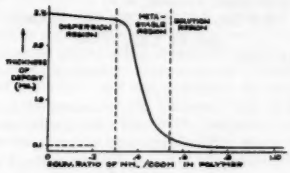


3,892,647

METHOD OF ELECTRODEPOSITING A POLYMER

Marvin A. Peterson, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 18,816, March 12, 1970, abandoned. This application Sept. 1, 1972, Ser. No. 285,612
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **23 Claims**



1. A process of producing a polymer coating on a conductive substrate, including the steps of:

reacting, in an inert water-miscible, organic solvent,
- a curable polymer having recurrent reactive carboxyl groups, and
- a volatile ammoniating agent, to form a water-soluble ammonium carboxylate salt of said polymer, and

adding sufficient water to said organic solution of said ammonium carboxylate polymer salt to form an aqueous-organic solution of said salt;

wherein the improvement comprises

adding a volatile weak acid to said aqueous-organic solution in an amount sufficient to precipitate at least a portion of said polymer as a stable dispersion without breaking the chain linkages of said polymer thereby to form both a dispersion phase and a solution phase of said polymer in an aqueous-organic liquid medium,

immersing a conductive substrate in said aqueous-organic liquid medium, and

applying a voltage to said medium and substrate sufficient to electrodeposit a polymer coating from said medium onto said substrate to a thickness of between about 1.0 and about 2.6 mils.

3,892,648

ELECTROCHEMICAL DEPOSITION OF BONE

David C. Phillips, Pittsburgh, and Bevil J. Shaw, Murrysville, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 16, 1974, Ser. No. 461,470
Int. Cl. C23b *13/00*
U.S. Cl. 204—181 8 Claims

1. A method of forming a prothesis for bone repair or replacement comprising:

electrodepositing finely divided powdered bone particles from aqueous glycerin and collagen dispersions onto a metallic substrate to form the prosthesis as a coating on the substrate; and

removing the metallic substrate by dissolution during and after formation of the prosthesis.

3,892,649

ELECTRODEPOSITION OF BONE WITHIN A PLASTIC MATRIX

David C. Phillips, Pittsburgh, and Bevil J. Shaw, Murrysville, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1974, Ser. No. 469,181
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 20 Claims

1. A method of forming a prosthesis for bone repair or replacement comprising:

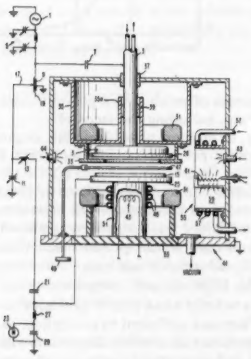
electrodepositing finely divided powdered bone particles from colloidal suspensions of said bone particles in a solution comprising acetone, dimethylsulfoxide, an organic amine and a polyamic acid onto a metallic substrate in the form of said prosthesis.

3,892,650

CHEMICAL SPUTTERING PURIFICATION PROCESS

Jerome J. Cuomo, Bronx, and Walter W. Molzen, Jr., Patterson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,409
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 13 Claims



7. A process for sputtering high purity materials, comprising the steps of:

positioning within a sputtering chamber a target material and substrate upon which said target material is to be sputtered;

evacuating said sputtering chamber;

providing an RF sputtering potential between said target and substrate sufficient to effect an ionization within the deposition region between target and substrate to produce target material deposition upon said substrate at a rate between approximately 5A/sec and 50A/sec;

procuring an active vapor species selected from the group consisting of SiH_4, $TiCl_4$, WF_6 and UF_6 which active vapor species will be readily disproportionated in the diffuse plasma produced within said chamber outside said deposition region; and

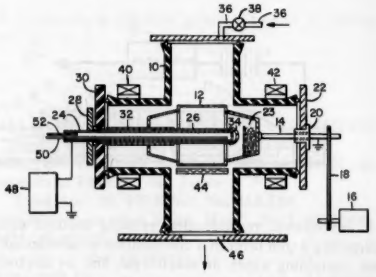
introducing into said chamber an inert sputtering atmosphere of argon having mixed therewith from 0.1 to 10% by volume of said procured active vapor species, said inert sputtering atmosphere of argon becoming ionized therein through stimulation by said RF sputtering potential to produce said diffuse plasma around and outside said deposition region under conditions such that said procured active vapor species is decomposed before reaching said deposition region so as to form an active gettering species to thereby reduce the outgassing rate required to maintain a given level of purity.

3,892,651

METHOD AND APPARATUS FOR COATING A PLURALITY OF CYLINDRICAL ARTICLES

Kenneth R. Salisbury, Campbell, and Robert J. Settzo, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 28, 1974, Ser. No. 473,756
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 15 Claims



1. A method of simultaneously coating a plurality of cylindrical articles comprising the steps of

providing a plurality of cylindrical articles,

providing an electrically conductive rotatable container within a housing,

disposing said articles in said rotatable container,

disposing a conductive cathode within said container, said cathode having a layer of sputtering material on the surface thereof,

evacuating said container and housing,

introducing a quantity of inert ionizable gas into said container and housing,

rotating said container about said cathode so that said articles are caused to tumble within said container,

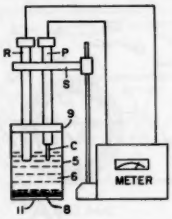
applying an electrical potential between said cathode and said container, and

sputtering said sputtering material from said cathode to the surface of said articles.

3,892,652
APPARATUS FOR pH MEASUREMENTS

Stuart A. Levine, Westwood, and Robert S. Potts, South Natick, both of Mass., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 408,301, Oct. 23, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,203
Int. Cl. G01n *27/28*
U.S. Cl. 204—195 R 4 Claims

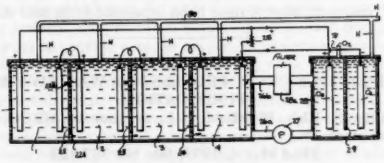


1. In a pH measuring system comprising a flow-through pH electrode, a pH reference electrode, and a container containing a saturated KCl solution forming an electrolytic salt bridge between the sensing portions of each electrode, the improvement wherein said container for the saturated KCl solution, consists of a polymeric material having separate orifices through which the sensing portions of each electrode are insertable and the orifices having means adapted to retain the electrodes in electrical contact with KCl solution and adapted, with the retained electrodes, to seal the KCl solution from contact with air external to the container, thereby providing a means for inhibiting KCl creep from the saturated KCl solution.

3,892,653
HYDROGEN GENERATOR

Francisco Pacheco, Hewitt, N.J., assignor to Michael Ebert, Mamaroneck, N.Y.; Patrick Clark, Ridgewood, N.J.; Carmine Joseph Girone, Bricktown, N.J. and F. Pacheco, Hewitt, N.J., part interest to each

Filed Nov. 14, 1973, Ser. No. 415,638
Int. Cl. B01k *3/00;* H01m *17/02*
U.S. Cl. 204—238 10 Claims



1. A hydrogen generator comprising:

A. at least one voltaic cell having an active magnesium electrode and a non-active electrode adapted to be immersed in a salt-water electrolyte contained in a tank having a hydrogen outlet above the level of said electrolyte,

B. a variable load resistor external to the cell and connected across the electrodes to produce a current in said cell resulting in the proportional production of hydrogen which is discharged through said outlet, a voltage being developed across said load resistor, and

C. an external flow loop communicating with said tank adjacent the lower and upper ends thereof to effect continuous circulation and cooling of said electrolyte to minimize polarization and other adverse effects, said loop including an electrically-operated pump connected to said load resistor and powered by said voltage, said pump functioning to draw the electrolyte from the lower end of the tank and to return it to the upper end thereof.

3,892,654
DUAL TEMPERATURE COAL SOLVATION PROCESS

Charles H. Wright, Overland Park, Kans., and Gerald R. Pastor, Takoma, Wash., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 4, 1974, Ser. No. 446,971
Int. Cl. C10g *1/00*
U.S. Cl. 208—8 15 Claims

1. A process for preparing deashed solid and liquid hydrocarbonaceous fuel from hydrocarbonactous feed coal containing ash comprising contacting the feed coal with hydrogen and a solvent for the hydrocarbonaceous material in the coal to form a coal-solvent slurry in contact with hydrogen, passing the slurry and hydrogen through a preheater for a residence time between 0.01 and 0.25 hours, said preheater having a length to diameter ratio of at least 100 to inhibit backmixing so that an increment of said slurry gradually increases in temperature in passge through the preheater from a low inlet temperature to a maximum temperature at the preheater outlet, the maximum temperature at the preheat outlet being 400° to 525°C., the viscosity of an increment of the slurry in passage through the preheater increasing initially to a value at least 20 times the viscosity of the solvent alone when each is measured at a temperature of 99°C., the viscosity of the slurry when measured at 99°C. subsequently dropping to a value lower than 10 times the viscosity of the solvent alone when each is measured at 99°C. in continued passage through the preheater, the viscosity of said slurry finally tending to increase to a value greater than 10 times that of the solvent alone when each is measured at 99°C. at the exit temperature of said preheater but the slurry and hydrogen being removed from said preheater after the relative viscosity drops to a value below 10 but before the relative viscosity finally increases to a value of 10, forcing reduction of the temperature of the slurry at least 10°C. to a temperature at which the viscosity of the slurry does not increase to a value above 10 times that of the solvent alone when each is measured at 99°F., passing the cooled slurry to a dissolver maintained at a temperature between 350° and 475°C. and which is below the temperature at the outlet of the preheater, the residence time of the slurry in the dissolver being greater than in the preheater, removing the slurry from the dissolver and separating the slurry into gaseous product, a fraction which is liquid at room temperature and a deashed fraction which is solid at room temperature, recycling hydrogen contained in said gaseous fraction to the preheater, and recycling at least a portion of said liquid fraction as solvent for said preheater step.

3,892,655
LAYERED CLAY MINERALS, CATALYSTS, AND PROCESSES FOR USING

Donald A. Hickson, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 311,081, Dec. 1, 1972, Pat. No. 3,844,979. This application Mar. 18, 1974, Ser. No. 452,473
Int. Cl. C01b *33/28;* C10g *13/02, 11/18*
U.S. Cl. 208—111 16 Claims

1. A hydroconversion process comprising contacting a hydrocarbon feedstock at conventional hydroconversion conditions with a catalyst comprising: (1) a layer-type trioctrahedral, clay-like mineral, and (2) at least one hydrogenation component, said mineral having prior to dehydrating and calcining of said catalyst, the empirical formula:

$$MgO : sSiO_2 : aAl_2O_3 : bAB : xH_2O$$

wherein the layer-lattice structure is composed of said silica, said alumina, said magnesia, said A and said B, and wherein s is from 0.66 to 1.33,

a is $0 < a \quad 0.333$,
b is $0 < b \quad 0.333$,
A is one equivalent of an exchangeable cation having a valence of 3 or less and is external to the layers of the framework or at the edges or between successive layers of the structure,
B is chosen from the group of negative ions consisting of F^-, OH^-, $\frac{1}{2}O^{--}$ and mixtures thereof, and is internal or at the edges and surfaces of the layers of the framework structure, and
x is from 2 to 3.5 at 50% relative humidity,
said mineral being characterized by a d_{001} spaacing at said humidity within the range which extends from a lower limit of about 10 Angstroms to an upper limit of 18 Angstroms when A is divalent or trivalent, with intermediate values possible when A is a mixture of monovalent, divalent and trivalent cations, and a d_{06} spacing at said humidity in the range of from 1.5375 to 1.5176 Angstroms by x-ray diffraction analysis.

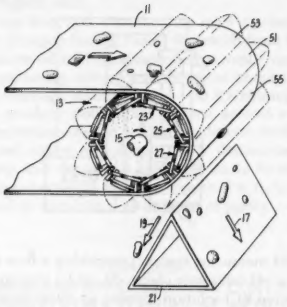
3,892,656
CONTINUOUS LOW PRESSURE CATALYTIC REFORMING PROCESS
John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 277,708, Aug. 3, 1972, Pat. No. 3,806,447. This application Mar. 29, 1974, Ser. No. 456,704
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **13 Claims**

1. In a process for reforming a hydrocarbon charge stock boiling in the gasoline range wherein the hydrocarbon charge stock and hydrogen are continuously contacted in a reforming zone with a reforming catalyst, containing a catalytically effective amount of a platinum group metal, at reforming conditions, including a pressure of about 25 to about 250 psig., selected to produce a high octane effluent stream, the improvement which comprises continuously adding a refractory light hydrocarbon selected from the group consisting of ethane and propane to the reforming zone in an amount sufficient to result in a mole ratio of refractory light hydrocarbon to hydrogen entering the reforming zone of about 0.4:1 to about 10:1, said refractory light hydrocarbon addition being commenced at start-up of the process and continuing throughout the duration of the reforming run.

3,892,657
HYDROCARBON CONVERSION WITH A MULTIMETALLIC CATALYTIC COMPOSITE
Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 272,582, July 17, 1972, abandoned, which is a division of Ser. No. 114,719, Feb. 11, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 448,131
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **17 Claims**

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon, at hydrocarbon conversion conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. percent platinum group metal, about 0.1 to about 3.5 wt. percent halogen, about 0.05 to about 5 wt. percent germanium or tin and indium in an amount sufficient to result in an atomic ratio of indium to platinum group metal of about 0.1:1 to about 1:1, wherein the platinum group metal and indium are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state, wherein substantially all of the indium and germanium or tin are present in an oxidation state above that of the corresponding elemental metal, and wherein substantially all of the halogen is present in the form of combined halide.

3,892,658
MAGNETIC PULLEY FOR REMOVAL OF NON-MAGNETIC PIECES FROM WASTE MATERIAL
Sander Benowitz, Sunnyvale, Calif., assignor to Combustion Power Company, Inc., Menlo Park, Calif.
Filed Sept. 17, 1973, Ser. No. 397,637
Int. Cl.² B03C *1/18*
U.S. Cl. 209—213 **12 Claims**

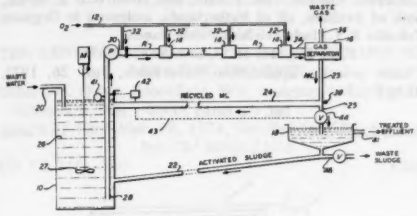


1. Apparatus for separating electrically conductive non-magnetic objects from a mixture including other types of objects, comprising:
means for guiding said mixture in a stream past a separation station,
magnetic means positioned adjacent said stream guiding means at said separation station for attracting said electrically conductive non-magnetic objects from said mixture as it passes thereby, said magnetic means including a plurality of electromagnetic assemblies positioned adjacent each other across the surface of said magnetic means and each having an excitation coil and an attractor current path electrically isolated from one another but arranged to be magnetically coupled in a manner that their magnetic fields overlap to produce a zone of attraction of non-magnetic particals when currents in said excitation coil and said attractor current path are out of phase, means for removing the attracted objects from the influence of said magnetic means and
means for collecting objects after removal from said magnetic means, whereby said electrically conductive non-magnetic objects have been separated from said stream.

3,892,659
MULTIPLE CYCLE PROCESS FOR WASTEWATER PURIFICATION
Bradley S. Kirk, Plainfield, N.J., assignor to AIRCO, Inc., Montvale, N.J.
Filed May 4, 1973, Ser. No. 357,123
Int. Cl. C02b *3/08;* **C02c** *1/08*
U.S. Cl. 210—3 **14 Claims**

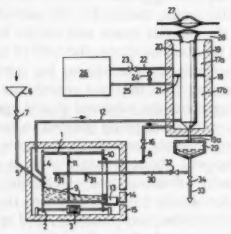
1. A process for treating wastewater in an aerobic reactor having a series of closed reaction stages for passage therethrough of a mixed liquor of wastewater and activated sludge and a clarifier for normally receiving mixed liquor from the reactor and collecting activated sludge, the process comprising the steps of collecting the influent wastewater together with activated sludge in a receiving well as mixed liquor, pumping said mixed liquor from said well into said reactor under a positive pressure to establish a substantially constant flow rate of mixed liquor through said reactor and to impart sufficient turbulence to said mixed liquor to maintain activated sludge in suspension during passage of said mixed liquor through said reactor, injecting oxygen into the mixed liquor in respective reaction stages, dividing mixed liquor leaving the reactor into separate streams which are directed to the clari-

fier and recycled to the well with at least half of the mixed liquor leaving the reactor being normally recycled to the well



and controlling the flow rate of the recycled stream according to the variation of the well liquid level from a predetermined reference level.

3,892,660
METHOD OF RENDERING DECAY PROCESSES MORE EFFECTIVE
Dag Romell, 10, Ynglingavagen, Djursholm, Sweden
Filed Apr. 16, 1973, Ser. No. 351,267
Claims priority, application Sweden, Apr. 4, 1973, 7304771
Int. Cl. C02c *1/14*
U.S. Cl. 210—12 **1 Claim**

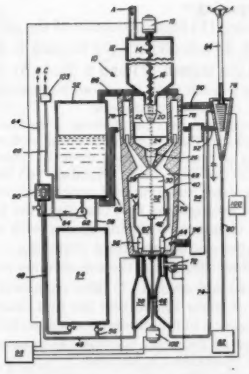


1. Method of rendering decay processes more effective in an apparatus for providing decaying of organic waste products, including introducing waste products into a container having a decaying zone for exposure to a decay process at above ambient temperatures, supplying air to said decaying zone so as to provide gaseous oxygen for maintaining an exothermic decaying process in said decaying zone, and removing said air from the decaying zone after having been brought to above ambient temperature by said exothermic processes, the improvement comprising: passing said air supplied to deliver gaseous oxygen to said decaying process and said air removed from said decaying zone after having been brought to above ambient temperature by heat generated in said decaying process through a heat exchanger; transferring heat from said removed air to said supplied air in said heat exchanger while separating flows of removed air and supplied air; condensing vapor generated during said decaying process and leaving said decaying zone together with air removed from said zone on the walls of said heat exchanger by restricting the quantity of said air supplied to the decaying zone, said air supplied to said decaying zone after having been heated by heat exchange with air removed from said decaying zone to above ambient temperature in a first part of said heat exchanger being conveyed to an enclosed space of a building for heat exchange with air contained in asid space, air from said space being conveyed to a second part of said heat exchanger for exchange of heat between air removed from said decaying zone and subsequently conveyed to said decaying zone to deliver gaseous oxygen for maintaining said exothermic decaying process; feeding said organic waste products into a vessel at one end thereof; conveying said waste products through said vessel while exposed to said decaying process towards an opposite end of the vessel for removal therefrom; introducing fresh air which is heated to above ambient temperature by heat supplied by said air removed from the decaying zone into the vessel adjacent said lastmentioned opposite end of the vessel; removing said air after having been brought to above ambient temperature by heat originating from said exothermic decaying process at said firstmentioned end of the vessel; and conveying said air to said heat exchanger for delivering heat to said air supplied to the decaying zone.

3,892,661
REMOVAL OF POLLUTANTS FROM WATER
Neil Graham Siviour, East Kew; Grant Marshall Pearson, Elwood, and Geoffrey Victor Cullen, North Balwyn, all of Australia, assignors to University of Melbourne, Australia
Filed July 14, 1971, Ser. No. 162,644
Claims priority, application Australia, July 24, 1970, 1960/70
Int. Cl. B01d *15/00*
U.S. Cl. 210—40 **1 Claim**

1. A method for the removal of pollutant microorganisms from water, which comprises contacting the water with a brown coal char, separating the char from the water after contact, wherein the brown coal char is present in a weight ratio of brown coal char to water of from about 1:10 to 1:500 and the brown coal char is contacted with the water for at least about 5 minutes.

3,892,662
CLOSED RECYCLING SYSTEM FOR WATER PURIFICATION AND WASTE REDUCTION
Daniel W. Stout, North Palm Beach, Fla., assignor to Gerald C. Daniels, North Palm Beach, Fla., a part interest
Filed Aug. 1, 1973, Ser. No. 384,511
Int. Cl. C02b *1/12*
U.S. Cl. 210—66 **23 Claims**



1. A process for household, commercial and industrial waste purification, reduction and water recycling comprising the steps of:

a. homogenizing the waste;

b. reducing the solid material in the waste to fine particle size;

c. atomizing the waste;

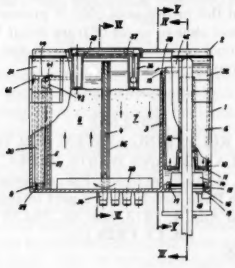
d. cryogenically freezing the atomized waste into minute crystalline particles, said particles consisting essentially of water crystals and crystals of solid waste;
e. homogenizing and reducing the size of said particles to produce a crystalline particle mass having the flow characteristics of a liquid;
f. centrifugally separating the water crystals from the solid waste crystals;
g. heating the water crystals to steam and condensing the steam to water for recycling to the household; and
h. heating said solid waste crystals to combustion gas and ash, separating said gas and ash, venting said gas and collecting said ash.

3,892,663

HOME FISH-TANK FILTER CONSTRUCTION

Walter Wiedenmann, Kongen, Germany, assignor to Gunther Eheim, Esslingen, Germany

Filed June 28, 1973, Ser. No. 374,794
Claims priority, application Germany, Aug. 1, 1972, 2237774
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **15 Claims**



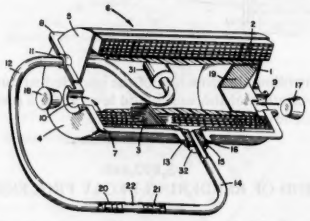
1. In the combination with an aquarium, a filter and pump assembly comprising
a filter housing (**1**) located outside of the aquarium;
means (**3, 4, 5**) sub-dividing the housing to define at least a first (**6**), a second (**7**) and a third (**8**) filter chamber therein in a serial fluid flow communication;
filter media inside the chambers;
positive pump means (**14**) having a suction pump inlet means (**20**) in fluid communication with the aquarium tank, and a pressure outlet directly connected to the bottom of the first filter chamber (**6**) and supplying aquarium water, to be filtered under pressure from below, upwardly, through the first chamber, the filter media in said first chamber (**6**) being coarse with respect to the media in the second and third chambers
a first overflow (**39, 40**) at the sub-dividing means between the first (**6**) and second (**7**) filter chambers to determine the level of water forced into the first chamber (**6**);
a fluid connection in the subdivision means located adjacent the bottom of the filter housing (**1**) between the second and third chambers (**7, 8**); and
an outlet trough (**31**) in fluid communication with the third filter chamber (**8**) and having an overflow edge (**41, 42**) adjacent the third chamber which is located at a level lower than said first overflow (**39, 40**) whereby water will be filtered by filter substance located in the first chamber (**6**) and flow under positive pressure upwardly therethrough, and water will be filtered by filter substance located in the second and third chambers (**7, 8**) and then can return to the aquarium through the outlet trough (**31**) after spilling over the overflow edge (**41, 42**).

3,892,664

BLOOD DIALYZER OF THE COIL TYPE

Leendert Van Assendelft, Arnhem; Jacob M. Van Der Kloot, Lunteren; Antonie Van 'T Sant, and Hendrikus J. Speklé, both of Arnhem, all of Netherlands, assignors to Organon Teknika B.V., Industrielaan, Netherlands

Filed July 26, 1973, Ser. No. 382,858
Claims priority, application Netherlands, July 26, 1972, 7210262
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **15 Claims**



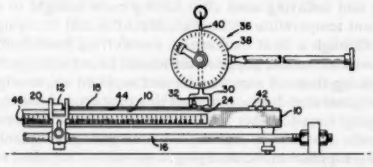
1. A blood dialyzer having a substantially cylindrical housing, a substantially cylindrical hollow core member disposed in said housing and having its wall spaced inwardly therefrom to provide an annular dialysis space therebetween, a dialyzer membrane and supporting gauze wound about the core member in the annular space, means for the introduction of dialyzer fluid into the dialysis space and means for flow of dialyzer fluid from the dialysis space, the wall of said core member having an opening therein, means for introducing blood through the opening into the said membrane comprising a blood tube, a plug about the tube and in said opening, one end of said dialyzer membrane being pleated to reduce its cross-section to correspond substantially to the cross-section of the opening and disposed about the said plug in a substantially liquid impervious relationship, said wall having a recess which extends circumferentially from adjacent to the said opening only partially around the core member, said recess diverging from said opening towards the ends of the core member, said pleated membrane being disposed in said recess, and means for removing the blood after dialysis from the dialyzer.

3,892,665

MEMBRANE METHOD AND PRODUCT

Edward F. Steigelmann, Park Forest; Herman E. Ries, Jr., Chicago, and Robert D. Hughes, Park Forest, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Oct. 15, 1973, Ser. No. 406,382
Int. Cl. B01d *25/16*
U.S. Cl. 210—490 **22 Claims**



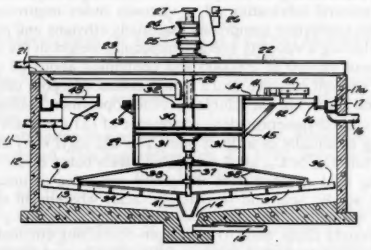
13. A composite structure consisting of an ultrathin membrane comprising a plurality of separate layers of a polymeric material, each layer being one or two molecules thick and the molecules in each layer being oriented so that each layer has a regular structure, said membrane being on the order of 0.01 to 0.001 μ thick and having an essentially continuous surface attached to a porous support, the pores of which are of a size

effective to support the membrane and larger than 25A in diameter.

3,892,666
THICKENER WITH ELEVATABLE SCRAPER AND NON-LEVATING SKIMMER

Gilbert W. Quast, Brookfield, Wis., assignor to Envirex Inc., Milwaukee, Wis.

Filed Mar. 18, 1974, Ser. No. 452,209
Int. Cl.[2] B01D *21/18*
U.S. Cl. 210—520 2 Claims



1. In a tank for the gravity separation of suspended solids from a liquid which tank includes side walls, a bottom, an influent pipe extending to the center of the tank, a bridge extending over the center of the tank and supporting said pipe, a central sump for receiving the solids settled on the tank bottom, a peripheral effluent trough having an overflow weir which establishes and maintains the liquid level within the tank, a central vertical drive shaft within the tank, scraper arms attached to and carried by the lower portion of said shaft and having scrapers for pushing the settled solids for movement over the tank bottom and pushing the settled solids to said sump, a drive and lift mechanism carried by said bridge and connected to the upper end of said shaft for adjusting the elevation of the scrapers of said scraper arms relative to the tank bottom, a drive tube surrounding the upper portion of said drive shaft, an influent well carried by and rotating with said drive tube, said influent pipe being carried by the bridge and opening into said feedwell, said feedwell defining an upper central influent distribution zone within the tank, and a skimming blade connected to, supported by and rotatable by and with said feedwell.

3,892,667
NOVEL FLAME RETARDANT COMPOSITIONS

Irving Touval, Edison, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 869,366, Oct. 24, 1969, abandoned. This application Oct. 15, 1973, Ser. No. 406,194
Int. Cl.[2] C09K *3/28*
U.S. Cl. 252—8.1 3 Claims

1. In an improved flame-retarding composition for use with synthetic organic polymers, such composition consisting essentially of particulate sodium antimonate and an organic chlorine- or bromine-containing compound equivalent to between 50 and 400% of chlorine or bromine based on the weight of the sodium antimonate, wherein the improvement resides in the presence of said sodium antimonate as particles, substantially all of which are between 0.1 and 8 microns in diameter and at least 40% of which are smaller than 1 micron.

3,892,668
DIGESTED ALKALINE TALL OIL PITCH SOAP COMPOSITION

Ying C. Chiu, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 351,738, April 16, 1973, Pat. No. 3,823,774, and a continuation-in-part of Ser. Nos. 235,039, March 15, 1972, abandoned, and Ser. No. 235,088, March 15, 1972, abandoned. This application Mar. 5, 1974, Ser. No. 448,236
Int. Cl.[2] C11D *15/04*; E21B *43/20*
U.S. Cl. 252—8.55 D 9 Claims

1. A digested alkaline tall oil pitch soap composition, which comprises a digestion product produced by:

mixing each part by weight of tall oil pitch with from about 1-5 parts by weight of an aqueous solution of an alkaline material that is substantially free of multivalent cations which form water-insoluble salts of fatty acids selected from the group consisting of alkali metal and ammonium hydroxides, carbonates, phosphates, fluorides and borates and alkali metal and ammonium salts of lower molecular weight carboxylic acids, said solution containing an amount of dissolved monovalent cationic alkaline material providing an excess alkalinity, relative to the acid number of the pitch, of from about 20 to 80%, and; heating the mixture for time and temperature equivalent to from about 4 hours at 70°C to about 16 hours at 110°C.

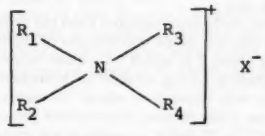
3,892,669
CLEAR FABRIC-SOFTENING COMPOSITION

Anthony A. Rapisarda, Elmhurst, N.Y.; Kenneth F. Schoene, Maywood, and William B. Benken, Cliffside Park, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,546
Int. Cl. D06m *13/38*
U.S. Cl. 252—8.75 6 Claims

1. A clear, single phase, liquid fabric softener composition comprising

i. about 2 to about 20 percent of dialkyl dimethyl quaternary ammonium salt conforming to the formula



wherein R_1 and R_2 are independently selected from the group consisting of

Radical I: $CH_3(CH_2)_m\underset{\displaystyle R_5}{\underset{|}{CH}}(CH_2)-$,

and

Radical II: $CH_3(CH_2)_y$ — and mixtures thereof,

where $m = 8$ through 14 inclusive,

$y = 11$ through 17 inclusive, and

Radical I comprises between about 5 and about 25 percent by weight of the total of R_1 and R_2, and Radical II comprises between about 40 and about 60 percent by weight of carbon chains where y is 11 through 14 inclusive, with the remainder being carbon chains where y is 15 through 17 inclusive,

R_3 and R_4 are independently selected from the group consisting of methyl, ethyl, propyl, and isopropyl radicals,

R_5 is methyl or ethyl, and

X is an anion selected from the group consisting of chloride, bromide, iodide, methosulfate, and ethosulfate, which imparts water dispersibility to the quaternary,

ii. about 98 to about 80 percent of a solvent for said quaternary ammonium salt, said solvent comprising a solubilizer selected from the group consisting of

a. arylsulfonates having the formula A-Bz-SO_3M wherein A is H, methyl, dimethyl, or isopropyl, Bz is a benzene nucleus, and M is Na, K, NH_4, or substituted ammonium,

b. alkanediols having 2–6 carbon atoms,

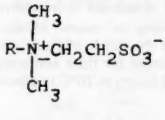
c. alkylene glycols having 2–6 carbon atoms,

d. methyl, ethyl, and butyl monoethers of diethyleneglycol,

e. 2-methoxy, 2-ethoxy, and 2-butoxy ethanol,

f. water-soluble quaternary ammonium compounds having the formula $R^1R^2R^3R^4NCl$ wherein R^1 is an alkyl group having about 8 to about 14 carbon atoms, R^2 and R^3 are methyl, and R^4 is benzyl or ethylbenzyl,

g. N-alkyl sulfobetaines having the formula



wherein R is an alkyl group having 10–14 carbon atoms,

h. N-2-hydroxymethyl taurines, wherein the alkyl group has 8 to 10 carbon atoms,

i. amines oxides having the formula $R^1R^2R^3N \rightarrow O$ wherein R^1 and R^2 are selected from the group consisting of methyl, ethyl, propyl, isopropyl and 2-hydroxyethyl, and R^3 is selected from the group consisting of alkyl and 2-hydroxyalkyl having about 8 to 14 carbon atoms,

j. phosphine oxides having the formula $R^1,R^2R^3P \rightarrow O$ wherein R^1 and R^2 are methyl, and R^3 is an alkyl radical having from 10 to about 16 carbon atoms,

k. sulfoxides having the formula $R^1\ R^2S = O$ wherein R^1 is a methyl, ethyl, or a 2-hydroxyethyl radical, and R^2 is an alkyl radical having about 6 to about 10 carbon atoms, and

l. nonionic surfactants selected from the group consisting of (a) ethylene oxide condensates of aliphatic alcohols having about 8 to about 18 carbon atoms, and (b) of alkylphenols having straight or branched chain alkyl groups with about 6 to about 12 carbon atoms, the ethylene oxide forming oxyethylene groups to the extent of 5 to 30 molar proportions per mole of condensate, and (c) ethylene oxide condensates with polyoxypropylene, having 30 to 90 percent ethylene oxide by weight per molecule, and mixtures thereof, said solubilizer being present in proportions ranging from about 4 to about 43 percent, whole composition basis, the balance being essentially water, the proportions of said components (a) – (1) being selected to provide a visually clear solution of said quaternary ammonium salt.

3,892,670

VAPOR SPACE CORROSION INHIBITED COMPOSITIONS

James A. White, Orange; Ralph P. Chesluk, Nederland, and Howard J. Platte, Groves, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 15, 1973, Ser. No. 388,677
Int. Cl. C10m *1/32*
U.S. Cl. 252—34.7 **10 Claims**

1. A lubricating oil composition having improved vapor space corrosion properties consisting of a corrosion inhibiting amount of a mixture of at least one amine salt of a C_8–C_{10} aliphatic monocarboxylic acid together with at least one amide of diethanolamine and a fatty acid containing from 12 to 20 carbon atoms, the ratio of amide to acid amine salt being from about 1:1 to about 1:10, the balance, a major amount of a mineral hydrocarbon oil.

3,892,671

LUBRICANT CONTAINING DISPERSANT-POUR DEPRESSANT POLYMER

Won R. Song, Maplewood, and Norman Jacobson, East Brunswick, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 25, 1972, Ser. No. 283,916
Int. Cl. C10m *1/32, 1/26*
U.S. Cl. 252—51.5 A **6 Claims**

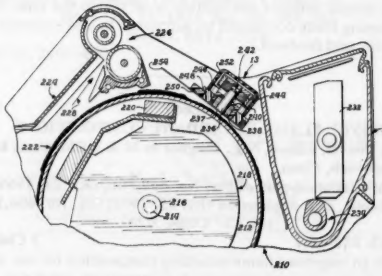
1. A lubricating oil composition comprising a major amount of a mineral lubricating oil, a viscosity index improving oil soluble copolymer comprising essentially ethylene and propylene, having a viscosity average molecular weight in the range of about 10,000 to 200,000 and containing about 60 to 80 mole percent ethylene, and a minor amount of a pour depressing and dispersing oil soluble acrylate copolymer, compatible with said ethyleneпropylene copolymer of (a) a mixture consisting essentially of at least one C_8 or C_{10} alkyl ester and at least one C_{14} or C_{16} alkyl ester, said esters being esters of an acrylic acid selected from the group consisting of unsubstituted acrylic acid and methacrylic acid, wherein all of the alkyl esters have the same acid moiety and said alkyl groups are straight chain, and (b) a nitrogen-containing ethylenically unsaturated monomer selected from the group consisting of N,N-dimethyl aminoethyl methacrylate and 4-vinyl pyridine, said acrylate copolymer having a number average molecular weight in the range of about 2,000 to about 20,000, and a nitrogen content of about 0.2 percent to about 5 percent by weight, said acrylate copolymer being produced from a monomer mixture which initially is essentially free of polymer, and wherein said acrylate copolymer is the sole acrylate copolymer present in said composition.

3,892,672

AUTOMATIC TONER CONCENTRATE DETECTOR AND CONTROL DEVICE

Stanley A. Gawron, Arlington Heights, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Division of Ser. No. 65,902, Aug. 21, 1970, Pat. No. 3,707,134.
This application Nov. 3, 1972, Ser. No. 303,455
Int. Cl. G03g *13/08;* **B67d** *5/08*
U.S. Cl. 252—62.1 **5 Claims**



1. The method of automatically maintaining a developer mix comprising toner particles and magnetic carrier particles in a weight ratio representative of an optimum performing developer mix for developing high quality electrostatic images comprising the steps of:

moving the developer mix along a path from a supply chamber onto the surface of a rotating magnetic brush cylinder and back to the supply chamber,

contacting said developer mix with a sensing device, at a point where it is forming the brush on the surface of the cylinder, said sensing device forming part of an electric circuit and exhibiting to the circuit an inductance responsive to changes in the weight ratio of said toner to said carrier,

detecting said changes in inductance, and

when the sensed inductance increases above a predetermined value, dispensing toner powder from a toner dispensing unit into said supply chamber and mixing the same with said developer mix until the reading of inductance given by said sensor is restored to said predetermined value.

3,892,673

COMPOSITION OF METAL SALT CRYSTALS HAVING A POLYMERIC COATING

John E. Ehrreich, Wayland, and Adrian R. Reti, Cambridge, both of Mass., assignors to Graham Magnetics, Graham, Tex.

Continuation-in-part of Ser. No. 127,514, March 24, 1971, abandoned. This application Feb. 22, 1972, Ser. No. 228,387

Int. Cl. B44d *1/02*

U.S. Cl. 252—62.54 **9 Claims**

1. A dry powder-like composition consisting essentially of (1) acicular particles of metal oxalate crystals of at least an average 1.5:1 length-to-diameter ratio and (2) from 1 to 15 percent by weight of a polymeric resin intimately associated therewith, and forming a coating over said oxalate crystals.

5. A dry powder-like composition formed of a mass (1) acicular particles of a metal-containing thermally decomposable organic salt crystals, and (2) a polymeric coating over said crystals.

3,892,674

BUILDERS FOR DETERGENT AND CLEANSING AGENTS

Joachim Kandler, Erftstadt-Lechenich; Karl Merkenich, Efferen; Klaus Henning, Hurth; Wilhelm Vogt, Efferen; Eberhard Auer, Erftstadt-Liblar, and Hermann Glaser, Erftstadt-Lechenich, all of Germany, assignors to Hoechst Aktiengesellschaft, Cologne, Germany

Filed Sept. 21, 1972, Ser. No. 291,043

Claims priority, application Germany, Sept. 24, 1971, 2147780

Int. Cl. C11d *9/42*

U.S. Cl. 252—96 **2 Claims**

1. A detergent composition containing dodecylbenzene sulfonate, tallow oil, hardened tallow soap, magnesium silicate, sodium silicate, sodium perborate tetrahydrate, sodium sulfate, and a builder, the builder being a substance selected from the group consisting of the sodium salt of glycerol-trioxydiacetic acid, the sodium salt of sorbitol-hexaoxydiacetic acid and the sodium salt of glycerol trimalic acid, the builder being present in a proportion between 10 and 80 weight percent based on the total dry ingredients of the composition.

3,892,675

COATING COMPOSITIONS

Warwick Kingston Clarke; Ronald Wynford Kenyon, and David Robinson, all of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 4, 1974, Ser. No. 430,623

Claims priority, application United Kingdom, Jan. 23, 1973, 3349/73

Int. Cl. C09k *1/00*; **B44d** *5/00*

U.S. Cl. 252—301.3 W **8 Claims**

1. Coating compositions comprising white pigment extender, polyvinyl acetate latex as sole binding agent, at least one sparingly water-soluble optical brightening agent in finely-divided form, and water.

3,892,676

DETERGENT COMPOSITIONS CONTAINING METHANE DIPHOSPHONIC ACID COMPOUNDS

Edward G. Budnick, Roselle, N.J., assignor to Plains Chemical Development Co., Roselle, N.J.

Division of Ser. No. 485,624, Sept. 7, 1965, Pat. No. 3,471,406. This application Apr. 23, 1969, Ser. No. 818,802

Int. Cl. C11d *1/04, 3/36*

U.S. Cl. 252—109 **13 Claims**

1. A detergent composition consisting essentially of a water soluble synthetic detergent and mixtures thereof and a builder which is an alkali metal or ammonium salt of methane hydroxy diphosphonic acid.

3,892,677

PROCESS FOR REGENERATION OF SULFUR OXIDE ACCEPTORS

Jaap E. Naber, and Frits M. Dautzenberg, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed July 15, 1969, Ser. No. 842,025

Int. Cl. B01j *11/30, 11/02*; **B01d** *53/34*

U.S. Cl. 252—411 S **11 Claims**

1. A process for the regeneration of a sulfur oxide-loaded acceptor obtained by contacting a sulfur oxide- and oxygen-containing gas mixture with a solid acceptor of a solid refractory carrier material composited with a metal or a metal compound capable of taking up sulfur oxides, which comprises treating said loaded acceptor at a temperature of 200° to 500°C with a reducing gas comprising an inert diluent and a hydrocarbon in a volume ratio of 0.2:1 to 20:1, said hydrocarbon having at least three carbon atoms per molecule; and removing a sulfur dioxide-containing spent reducing gas.

2. The process of claim 1 in which the metal or metal compound is copper or copper oxide.

3. The process of claim 1 in which said solid carrier material is composited with a vanadium compound and an alkali metal compound capable of taking up sulfur oxides.

6. The process of claim 1 in which said inert diluent is steam.

3,892,678

POROUS SILICON DIOXIDE-BASED ADSORBENTS FOR CHROMATOGRAPHY AND PROCESSES FOR THEIR MANUFACTURE

Istvan Halasz, Saarbrucken; Otto-Ernst Brust, and Imrich Sebestian, both of Dudweiler, Saar, all of Germany, assignors to Istvan Halasz, Saarbrucken, Germany

Filed July 16, 1973, Ser. No. 379,705

Claims priority, application Germany, July 27, 1972, 2236862

Int. Cl. B01j *31/02*

U.S. Cl. 252—426 **10 Claims**

1. A porous silicon dioxide-based absorbent for chromatography having a surface modified by chemical conversion of silanol groups, said absorbent characterized in that its surface is modified by primary or secondary, aliphatic or araliphatic amines having from two to twenty carbon atoms and lacking any reactive hydroxy groups, said amines being bound onto said surface by means of a SiN linkage.

3,892,679

CATALYST FOR PREPARATION OF ETHYLENE OXIDE

Howard V. Holler, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sept. 24, 1973, Ser. No. 399,905
Int. Cl.[2] B01J *23/48*
U.S. Cl. 252—476 6 Claims

1. A process of preparing a supported silver catalyst active in the conversion of ethylene to ethylene ethylene oxide containing from about 2 to 20% by weight metallic silver deposited evenly on the surface of a catalyst support as discrete particles having an average diameter of less than about 150nm which comprises:

a. coating the surfaces of a catalyst support with an overlayer of polyacrylonitrile complexed with silver salt and

b. heating the coated support at a temperature of from about 200° to about 600°C for a period of time sufficient to pyrolyze the polyacrylonitrile and convert the silver ions of the complexed silver salt into discrete particles of silver.

3,892,680

BUILT DETERGENT COMPOSITION CONTAINING CALCIUM-INSENSITIVE DETERGENT AND A CARBONATE-SILICATE BUILDER

Lawrence Benjamin, Springfield Twp., Hamilton County, and Jay Harold Saylor, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 98,113, Dec. 14, 1970, abandoned. This application Mar. 14, 1973, Ser. No. 341,182
Int. Cl. C11d *3/08, 3/10*
U.S. Cl. 252—532 3 Claims

1. A laundry composition consisting essentially of

1. a synthetic organic detergent having a formula

$$RO(C_3H_6O)_xSO_3M$$

wherein R is alkyl or alkenyl of about 10 to about 18 carbon atoms, *x* is 1 to 30 and M is a salt-forming radical selected from the group consisting of alkali metals, ammonium and mono-, di-, and tri lower alkyl substituted ammonium, and

2. as a detergency builder, a mixture of an alkali metal carbonate and an alkali metal silicate wherein the weight ratio of carbonate to silicate is from 3:1 to 1:3 and the SiO_2/M_2O weight ratio of the silicate when M is an alkali metal is from 1.0 to 3.5:1; and the weight ratio of the detergent to builder is from 1:10 to 3:1.

3,892,681

DETERGENT COMPOSITIONS CONTAINING WATER INSOLUBLE STARCH

James Byrd Edwards, and Francis Louvaine Diehl, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 16, 1973, Ser. No. 333,103
Int. Cl. C11d *1/12*
U.S. Cl. 252—551 14 Claims

1. A laundry detergent composition comprising:

a. from about 4% to about 60% by weight of an organic surface-active agent selected from the group consisting of anionic, nonionic, zwitterionic and ampholytic detergents and mixtures thereof; and

b. from 0.1% to about 6% by weight of granular substantially water-insoluble starch having an average particle diameter from 1.0 to about 45 micrometers and a swelling power of less than about 15 at a temperature of 65°C.

6. A laundry detergent composition comprising

a. from about 4% to about 60% by weight of an organic surface-active agent selected from the group consisting of anionic, nonionic, zwitterionic and ampholytic detergents and mixtures thereof;

b. from 0.1% to about 6% by weight of a granular substantially water-insoluble starch having an average particle diameter from 1.0 to about 45 micrometers and a swelling power of less than about 15 at a temperature of 65°C; and

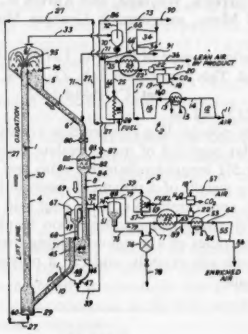
c. from about 1% to about 50% by weight of a smectite-type clay having an ion-exchange capacity of at least about 50 meg/100 g.

3,892,682

SINGLE REACTOR FLUIDIZED BED OXYGEN ENRICHMENT PROCESS AND APPARATUS

Dharamvir Punwani, Chicago, Ill.; Lester G. Massey, Moreland Hills, Ohio, and Paul B. Tarman, Elmhurst, Ill., assignors to Consolidated Natural Gas Service Co., Inc., Cleveland, Ohio

Filed Mar. 30, 1973, Ser. No. 346,570
Int. Cl. C01b *13/00*
U.S. Cl. 252—186 30 Claims



1. A process for enriching air with oxygen from air by alternately stripping oxygen from a barium-containing oxygen acceptor composition bed material in the presence of air and causing oxygen to be accepted from air by said bed material comprising the steps of:

a. circulating a hot barium-containing bed material in a peroxide state through a reduction zone,

b. passed heated air at a pressure below about 15 psia through said bed material in said reduction zone to enrich the oxygen content of said air by stripping oxygen from said bed material and converting a portion of barium peroxide therein to the monoxide state,

c. circulating said converted bed material containing barium monoxide through a second, oxidizing zone,

d. passing heated, pressurized air through said bed material in said oxidizing zone so that said bed material accepts oxygen by converting a portion of the barium monoxide therein to barium peroxide, and to produce a lean air by-product gas,

e. maintaining the pressure in said oxidizing zone in a range of from about 1.5 to 10 times the pressure in said reduction zone,

f. returning said bed to said reduction zone,

g. maintaining said bed in a fluidized condition in one of said zones,

h. maintaining said bed in an air-entrained, upwardly moving condition in the other of said zones, and

i. collecting an enriched air product gas from said reduction zone having from about 22 to 75 mole percent oxygen therein.

3,892,683
HYDROCARBON ISOMERIZATION CATALYST

Dalia Germanas, Des Plaines, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 293,232, Sept. 28, 1972, abandoned. This application May 17, 1974, Ser. No. 471,070

Int. Cl. B01j *11/78*

U.S. Cl. 252—442 **11 Claims**

1. A catalyst composition consisting essentially of a composite of from about 0.01 to about 2.0 wt. % of platinum group metal and from about 0.01 to about 5.0 wt. % of tin with a refractory inorganic oxide reacted with a Friedel Crafts metal halide in an amount to introduce at least 3.5 wt. % combined halogen to the composite, said composite having been treated at a temperature of from about 150° to about 350° C. with a polyhalo compound containing at least two chlorine atoms and selected from the group consisting of methylene halide, haloform, methylhaloform, carbon tetrahalide, sulfur dihalide, sulfuryl halide, thionyl halide, and thiocarbonyl tetrahalide to add at least about 0.1% combined halogen to the composite.

3,892,684
CLEAR FLEXIBILIZED EPOXY RESINS

Ted J. Logan, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

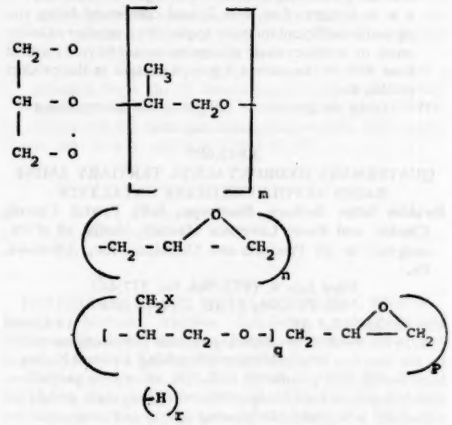
Division of Ser. No. 299,491, Oct. 20, 1972, Pat. No. 3,792,018, which is a continuation-in-part of Ser. No. 195,455, Nov. 3, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 404,078

Int. Cl. C08g *30/10*

U.S. Cl. 260—2 N **3 Claims**

1. A precondensate for use in preparing clear flexibilized epoxy resin compositions, consisting essentially of

A. triepoxide flexibilizer having the formula



wherein X is chlorine or bromine, n is a number from 1 to 3, the sum of $n + p$ is equal to from 2 to 3, r is equal to from 0 to 1, the sum of $n + p + r$ is 3, and m, n, p and r are selected so as to give a molecular weight of from about 1,500 to about 2,500, and q is a number from 0 to 1.3, and

B. a stoichiometric type curing agent capable of curing epoxy resins at temperatures of 35°C or lower, the proportions of A and B being such that B is present in sufficient quantity to react stoichiometrically with all of A and with from about 75% to about 125% of an epoxy base resin when said epoxy base resin is mixed with said precondensate in such proportion that from about 5 to about 50 parts by weight of flexibilizer are present per 100 parts by weight of epoxy base resin.

3,892,685
POLYURETHANE FOAMS

Michael Stanley Pusey, High Wycombe, England, assignor to Dunlop Limited, London, England

Filed Nov. 28, 1973, Ser. No. 419,875

Claims priority, application United Kingdom, Dec. 6, 1972, 56312/72

Int. Cl. C08g *22/46, 33/02*

U.S. Cl. 260—2.5 BB **13 Claims**

1. A process for the production of a one-shot flexible flame-retardant polyurethane foam which comprises reacting together in a foam-forming reaction mixture:

a. a polymeric polyol;

b. an aromatic polyisocyanate

c. as a foam modifier a substance normally effective as a catalyst for the polymerization of tolylene diisocyanate selected from the group consisting of an alkali metal salt of a weak organic acid and an alkali metal salt of a weak inorganic acid and

d. as an additive to prevent the deleterious effect of said foam modifier on ageing of the foam, a substance which releases an aliphatic or aromatic sulphonic acid under the conditions of said foam-forming reaction.

3,892,686
CELLULAR PRODUCTS PRODUCED BY FOAMING AND CROSS-LINKING AROMATIC POLYSULFIDES

Gar Lok Woo, Tiburon, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 253,144, May 15, 1972. This application Mar. 26, 1973, Ser. No. 344,694

Int. Cl. C08g *53/08;* **C08j** *1/22*

U.S. Cl. 260—2.5 A **40 Claims**

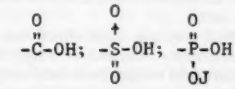
1. A sulfur-based foam produced by the steps of

I. mixing and stirring for a period of from 1 to 24 hours at a temperature of from about 120°to about 200°C. from about 0.5A to 50A parts of elemental sulfur with 1 part of an aromatic carbocyclic or heterocyclic compound containing from about 4 to 24 carbon atoms, said aromatic compounds being substituted by at least one group of the formula —OH or —NHR in which R is hydrogen or lower alkyl, said compound containing at least 2 ring hydrogen atoms per molecule, wherein the stabilization energy of said aromatic compound is at least 20 in the case of the carbocyclic compounds and 10 in the case of the heterocyclic compounds, and wherein A is equal to the average number of —OH or —NHR groups in the aromatic compound on a molar basis; and

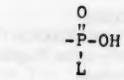
II. contacting the product of (I) at a temperature of about 100°to 200°C. with from about 0.002 to 0.50 acid equivalents per 100 g. of (I) of an acid of the formula equivalents per 100 g. of (I) of an acid of the formula

(i)

in which Y is



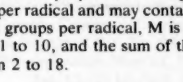
in which J is H or alkyl of 1 to 6 carbon atoms;



in which L is H, hydrocarbyl of 1 to 18 carbon atoms, or is a group the same as the other group attached directly to the phosphorus atom through a carbon-phosphorus bond;

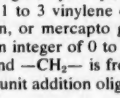
in which J is as previously defined; or

in which Q is H, hydrocarbyl of 1 to 18 carbon atoms, or is a group the same as the other group attached directly to the boron atom through a carbon-boron bond; R_1 and R_2 are divalent hydrocarbon radicals of 1 to 20 carbon atoms which may be substituted by up to two halogen, hydroxyl, or mercapto groups per radical and may contain from 1 to 3 vinylene or ethynylene groups per radical, M is O, S_f or $—CH_2—_f$, f is an integer of 1 to 10, and the sum of the carbon atoms in R_1 and R_2 is from 2 to 18.

(ii) 

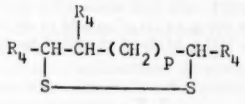
in which Y is as previously described, R_3 is H or a hydrocarbyl radical of 1 to 18 carbon atoms which may be substituted by up to two halogen, hydroxyl, or mercapto groups and may contain from 1 to 3 vinylene or ethynylene groups, Z is hydroxy, halogen, or mercapto group or H when m is greater than 0, m is an integer of 0 to 18, and the sum of the carbon atoms in R_3 and $—CH_2—$ is from 1 to 19.

iii. 2 to 5 unit addition oligomers of the unsaturated acids of (ii).

(iv) 

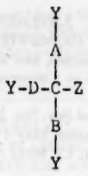
wherein R_3 and Y are as previously defined.

v. 2 to 5 unit addition oligomers of the acids of (iv).

(vi) 

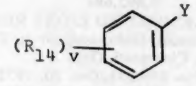
in which R_4 is H, Y is as previously defined, an aliphatic hydrocarbon radical of 1 to 10 carbon atoms, or an aliphatic hydrocarbon radical of 1 to 10 carbon atoms substituted with acid group Y as previously defined, wherein at least one R_4 is a carboxy radical or a substituted aliphatic hydrocarbon radical, and wherein p is 1 or 2.

vii. Partially esterified polybasic acids which may contain a hydroxy, mercapto, carboxy, vinylene or ethynylene group, and have an acid equivalent weight (molecular weight divided by the number of free acid groups) within the range of about 100 to about 1,000.

(viii) 

in which Y is as previously defined, A, B, and D are independently $C_nH_m(R_{11})_p(R_{12})_q$, n is an integer 0 to 5, p is an integer 0 to 2, q is an integer 0 to 1, R_{11} is alkyl of 1 to 4 carbon atoms, Z is H, OH, or SH, m is an integer equal to or less than $2n-p-q$, R_{12} is OH or SH, and in at least 2 of A, B and D, n is equal to or greater than 1.

ix. Acids of the formula $R_{13}Y$ in which Y is as previously defined and R_{13} is a hydrocarbon group of 3 to 24 carbon atoms in which Y is attached to R_{13} through an alicyclic group of 3 to 12 carbon atoms.

(x) 

in which Y is as previously defined, R_{14} is SH, an aliphatic hydrocarbon radical of 2 to 24 carbon atoms or a cycloaliphatic hydrocarbon radical of 5 to 20 carbon atoms, and v is an integer 1 to 5.

III. contacting the product of (II) at a temperature in the range of 110°–160°C with a compound of the formula $R_5(CNX)_n$ in which R_5 is a polyvalent organic radical, X is a chalcogen having a molecular weight less than 33, and n is an integer of at least 2, said compound being employed in sufficient quantity to provide a number of isocyanate or isothiocyanate groups necessary to react with at least 10% of the carboxyl groups present in the product of (II), and

IV. cooling the product of (III) to ambient temperature.

3,892,687

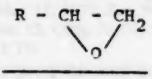
QUATERNARY HYDROXYALKYL TERTIARY AMINE BASES AS POLYURETHANE CATALYSTS

Ibrahim Selim Bechara, Boothwyn; Felix Patrick Carroll, Chester, and Rocco Lawrence Mascioli, Media, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed July 9, 1973, Ser. No. 377,447
Int. Cl. C08g *22/36, 22/44, 33/04*
U.S. Cl. 260—2.5 AC **14 Claims**

1. In the method of preparing cellular polyurethane plastic by the reaction of a precursor comprising a polyol having at least two alkanol groups per molecule, an organic polyisocyanate compound containing at least two isocyanate groups per molecule, a volatilizable blowing agent, and a catalyst, the improvement which comprises carrying out said reaction in the presence of a tertiary amine selected from the group consisting of triethanolamine, methyldiethanolamine, ethyldiethanolamine, dimethylethanolamine, butyldiethanolamine, octadecyldiethanolamine, cyclohexyldiethanolamine, benzyldiethanolamine, benzylmethylethanolamine, diethylethanolamine, diethylcyclohexynolamine, methyloctadecylethanolamine, methyloctadecenylethanolamine, and dimethylbenzylamine and a quaternary hydroxyalkyl tertiary amine base catalyst prepared by reacting stoichiometric amounts of water or a carbinol selected from the group consisting of methanol, ethanol, butanol, phenol and [bis-phenol A] p,p'-dihydroxydiphenyldimethylmethane and an alkylene oxide selected from the group consisting of propylene oxide, ethylene oxide, 1,2-butylene oxide, 1,2-pentene oxide, styrene oxide, butadiene

epoxide, a lauryl-myristyl range olefin oxide having an average molecular weight of 189 and having its principal constituent the oxidation product of terminal straight chain mono-olefins which olefin is represented by the formula:



where R is a C_9-C_{12} straight chain alkyl radical and mixtures thereof and an excess amount of said tertiary amine at controlled temperatures in the range of 0° to about 100°C.

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N-THIOCARBAMOYL-POLYALKYLENEPOLYAMINE GROUP CONTAINING HEAVY METAL ADSORBING RESINS

Kensuke Motani; Akihiko Nakahara, and Nobuyuki Kuramoto, all of Tokuyama, Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Japan

Division of Ser. No. 339,382, March 7, 1973, Pat. No. 3,847,841. This application May 30, 1974, Ser. No. 474,723
Claims priority, application Japan, Mar. 11, 1972, 47-24424; Mar. 11, 1972, 47-24425; Mar. 11, 1972, 47-24426; Mar. 11, 1972, 47-24427
Int. Cl. C08f *27/02, 27/04*
U.S. Cl. 260—2.2 R **2 Claims**

1. A heavy metal adsorbing resin consisting essentially of a polymer comprising:

A. a backbone polymer selected from polystyrene, polyvinyl chloride, a copolymer of vinyl chloride with another copolymerizable monomer, a graft copolymer of a rubbery substance to which vinyl chloride has been grafted and a chlorinated polyolefin; and

B. a moiety attached to the backbone polymer which is selected from the N-thiocarbamoyl-polyalkylene polyamine group consisting of $-NH(CH_2CH_2NH)_nCSNHR$, wherein R is a hydrogen atom, alkyl moiety, aryl moiety, or acyl moiety, and n is from 1 to 100.

3,892,689

THIOUREIDO HEAVY METAL ADSORBING RESINS

Kensuke Motani; Akihiko Nakahara, and Nobuyuki Kuramoto, all of Tokuyama, Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Division of Ser. No. 339,382, March 7, 1973, Pat. No. 3,847,841. This application May 30, 1974, Ser. No. 474,724
Claims priority, application Japan, Mar. 11, 1972, 47-24424; Mar. 11, 1972, 47-24425; Mar. 11, 1972, 47-24426; Mar. 11, 1972, 47-24427
Int. Cl. C08f *27/02, 27/04*
U.S. Cl. 260—2.2 R **2 Claims**

1. A heavy metal adsorbing resin consisting essentially of a polymer comprising:

A. a backbone polymer selected from polystyrene, polyvinyl chloride, a copolymer of vinyl chloride with another copolymerizable monomer, a graft copolymer of a rubbery substance to which vinyl chloride has been grafted and a chlorinated polyolefin; and

B. a moiety attached to the backbone polymer which is selected from at least one thioureide of the group consisting of —NHCSNHR, wherein R is a hydrogen atom, alkyl moiety, aryl moiety, or acyl moiety.

3,892,690

METHOD OF PREPARING POLYETHYLENE FOAM

Carl A. Setterstrom, Ho-Ho-Kus, N.J., assignor to Cities Service Company, Tulsa, Okla.

Continuation of Ser. No. 66,719, Aug. 25, 1970, abandoned. This application June 23, 1972, Ser. No. 265,865
Int. Cl. C08f *47/10, 3/04*
U.S. Cl. 260—2.5 HA **7 Claims**

1. A method for manufacturing a polyethylene foam which comprises:

a. withdrawing a solution of polyethylene in ethylene monomer from a heated, high pressure polyethylene polymerization zone wherein the ethylene monomer is the polymerization medium,

b. reducing the pressure of said solution to within the range of about 150 psi to about 1200 psi, vaporizing and separating some of the ethylene monomer from the solution while maintaining the solution temperature above the melting point of the polyethylene and reducing the ethylene content of the solution to a level of about 0.1 to about 5 weight percent,

c. extruding the heated, devaporized solution from step (b) into a recovery zone at atmospheric pressure and at a temperature at which the ethylene of the solution vaporizes and the polyethylene simultaneously solidifies, the polyethylene being simultaneously blown and solidified upon extrusion, and

d. recovering from step (c) a closed-cell, solidified polyethylene foam product having a density of less than 10 lbs. per cubic foot.

3,892,691

POLYURETHANE STRUCTURAL MEMBER

John R. White, Wadsworth, and James M. Hogan, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 10, 1974, Ser. No. 487,067
Int. Cl. C08g *22/48, 22/06, 22/14*
U.S. Cl. 260—2.5 AM **2 Claims**

2. The structural member of claim 1 obtained by reacting a liquid reaction mixture comprising a mixture of 86 to 104 parts of a quasi-prepolymer of methane-di(phenyl isocyanate) and tripropylene ether glycol or dipropylene ether glycol having 18 to 26 weight percent free NCO, 82 to 78 parts of polypropylene ether triol, said triol being obtained by condensing propylene oxide on a triol generator selected from the generator consisting of trimethylol propane, trimethylol ethane and glycerol and capping with 10 to 25 mole percent of ethylene oxide to give a molecular weight of 4500 to 6500, 14 to 25 parts of 1,4-butanediol, and 0 to 10 parts of a blowing agent selected from the halohydrocarbons boiling below 110°F. or water to give a density of 50 to 70 pounds per cubic foot.

3,892,692

FLEXIBLE VINYL CHLORIDE-ETHYLENE COPOLYMER COMPOSITIONS

Charles A. Heiberger, Princeton, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 335,018, Feb. 23, 1973, abandoned, which is a continuation of Ser. No. 199,783, Nov. 17, 1971, abandoned. This application May 13, 1974, Ser. No. 469,184
Int. Cl. C08f *45/38, 45/40, 45/50*
U.S. Cl. 260—23 XA **4 Claims**

1. A flexible, vinyl chloride-ethylene copolymer composition having a high degree of plasticizer permanence, permanent modulus index of less than about 3,000 pounds per square inch and a modulus of elasticity of less than 10,000 pounds per square inch at 23°C consisting essentially of:

a. between about 70 and about 85 weight percent of a vinyl chloride-ethylene copolymer having an ethylene content of between about 10 and about 40 mol percent, an intrin-

sic viscosity of between about 0.5 and 1.5 dl/g., a permanent modulus index of less than about 3,000 pounds per square inch at 23°C and a T_4 value above about 25°C, said permanent modulus index being defined as the 100% tensile modulus of a composition when containing 17 parts per hundred parts of copolymer of dioctyl phthalate plasticizer, and

b. between about 15 and about 30 weight percent of a monomeric plasticizer selected from the group consisting of dialkyl phthalates, dialkyl alkanedicarboxylates, aryl and alkyl phosphates, said plasticizer containing between about 24 and about 35 major atoms selected from the group consisting of carbon, oxygen and phosphorus.

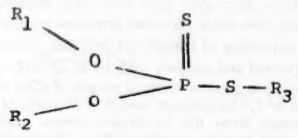
3,892,693

HIGH TEMPERATURE STABILIZED POLYBUTADIENE RESIN

Delmar F. Lohr, Jr., and Edward L. Kay, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 20, 1974, Ser. No. 452,775
Int. Cl. C08c *11/72*; C18d *9/14*
U.S. Cl. 260—23.7 R 36 Claims

1. A cured heat-stabilized resin, comprising by weight, 100 parts of a resin selected from the class consisting of a homopolymer of butadiene or a copolymer of butadiene and styrene containing at least 40% of butadiene, at least 80% of the butadiene repeating units in the polymer or copolymer being in the 1,2-configuration, from 0.5 to about 5.0 parts of a metal soap wherein said metal is selected from the class consisting of calcium, zinc, magnesium, and cadmium and said soap is of a fatty acid having from 8 to about 26 carbon atoms, from 0.5 to about 6.0 parts of a peroxide curing agent giving radicals having the formula $R_2(CH_3)CO.$ wherein R is a hydrocarbon radical of 1 to about 20 carbon atoms, and, from 0.5 to about 5.0 parts of an ester of O,O-dihydrocarbylphosphorodithioic acid having the formula



wherein R_1 and R_2 are hydrocarbyl groups having from 1 to about 25 carbon atoms and R_3 is a hydrocarbyl group containing from 1 to 25 carbon atoms.

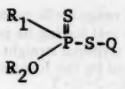
3,892,694

SUBSTITUTED PHOSPHOROUS CONTAINING ALKYL THIO METHYL CARBOXYLATES

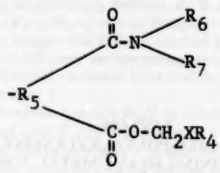
Charles Kezerian, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 69,089, Sept. 5, 1970, Pat. No. 3,822,272, which is a division of Ser. No. 681,576, Nov. 8, 1967, Pat. No. 3,562,362. This application Apr. 1, 1974, Ser. No. 456,700
Int. Cl.² C07D *295/18*
U.S. Cl. 260—247.1 P 1 Claim

1. A compound of the formula



in which R_1 is selected from the group consisting of alkyl having 1 to 4 carbon atoms and alkoxy having from 1 to 4 carbon atoms; R_2 is an alkyl group having from 1 to 4 carbon atoms; and Q is



in which

X is selected from the group consisting of thio and sulfinyl,

R_4 is an alkyl group having from 1 to 4 carbon atoms,

R_5 is a trivalent saturated hydrocarbon group having from 1 to 2 carbon atoms, and

R_6 and R_7 taken together is ethyleneoxyethylene.

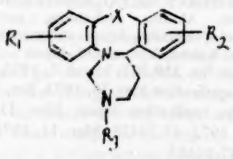
3,892,695

PYRIMIDINO-DIBENZO-AZEPINE,-OXAZEPINE,-THIAZEPINE AND DIAZEPINE DERIVATIVES

Willem Jacob van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Sept. 7, 1973, Ser. No. 396,251
Claims priority, application Netherlands, Sept. 23, 1972, 7212915
Int. Cl.² C07D *471/04*
U.S. Cl. 260—251 A 3 Claims

1. A compound of the formula:



in which

X is selected from the group consisting of oxygen, sulfur, the group NR_4 and $—CH_2—$;

R_1 and R_2 are selected from the group consisting of hydrogen, halogen, hydroxy, alkyl having 1–6 carbon atoms, alkoxy having 1–6 carbon atoms, and trifluoromethyl;

R_3 is selected from the group consisting of hydrogen, alkyl having 1–6 carbon atoms, and

R_4 is selected from the group consisting of hydrogen and alkyl having 1–6 carbon atoms, and the pharmaceutically acceptable acid addition salts and quaternary ammonium compounds thereof.

3,892,696

POLYUREAS AND PREPARATION THEREOF

Louis L. Wood, Potomac, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 12, 1972, Ser. No. 252,793
Int. Cl. C08g 22/00, 51/34
U.S. Cl. 260—29.2 TN 11 Claims

1. A method for preparing aqueous polyurea solution which consists essentially of preparing a non-crosslinked polyurea by reacting a first component comprising polyisocyanate selected from the group consisting of polyaryl polyisocyanate, tolylene diisocyanate, triphenylmethane-4,4'4'',-triisocyanate, benzene-1,3,5-triisocyanate, toluene-2,4,6-triisocyanate, diphenyl-2,4,4'-triisocyanate, hexamethylene diisocyanate, xylylene diisocyanate, chlorophenylene diisocyanate, diphenylmethane-4,4'-diisocyanate, napthalene-1,5-diisocyanate, xylene-alpha,alpha'-diisothiocyante, 3,3'-dimethyl-4, 4'-biphenylene diisocyanate, 3,3'-dimethoxy-4, 4'biphenylene diisocyanate, 2,2',5,5'-tetramethyl-4, 4'-biphenylene diisocyanate, 4,4'-methylenebis (phenylisocyanate)c 4,4'-sulfonylbis (phenylisocyanate), 4,4'-methylene di-ortho-tolylisocyanate, ethylene diisocyanate, ethylene diisothiocyanate, trimethylenediisocyanate and the like; and a second component comprising polyamine having from about 2 to about 23 pendant amine groups in a non-protonic carbonyl containing solvent selected from the group consisting of acetone, methyl ethyl ketone, cyclohexanone, acetaldehyde, propionaldehyde, butyradelhyde, and isobutyraldehyde; said polyamine and said solvent being first combined for from about 2 minutes to about 24 hours at a temperature of −5°C. to about 150°C.; the molar ratio of isocyanate groups in the polyisocyanate to amine groups in the polyamine being from about 1:1 to about 1:20 isocyanate to amine; adding water and removing the solvent from the non-crosslinked polyurea.

3,892,697

PREPARATION OF CROSSLINKED POLYMER LATEX FROM AQUEOUS EMULSION OF SOLVENT/POLYMER SOLUTION OF PRECURSOR LATEX PARTICLE SIZE

Oliver W. Burke, Jr., Fort Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1966, Pat. No. 3,622,127, which is a continuation-in-part of Ser. No. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,462
Int. Cl. C08f 45/24
U.S. Cl. 260—29.6 CM 4 Claims

1. A method of preparing a crosslinked polymer latex from an aqueous emulsion of solvent/polymer solution of precursor latex particle size, the solvent of the polymer solution being an organic solvent for the polymer and itself or as an azeotrope with water having a boiling point below that of water at atmospheric pressure, the polymer being essentially organic solvent soluble or dispersable and essentially water insoluble and cross-linkable, and said emulsion having been prepared with the aid of an emulsifying agent, which method consists essentially of:-

a. converting the emulsion to an aerosol of latex phase in an aqueous and solvent vapor phase by dispersing said emulsion into a flow of gas consisting essentially of steam at a temperature sufficiently high to vaporize solvent from said emulsion but not so high as to be deleterious to the stability of the emulsion and sufficient in quantity to vaporize essentially all of the solvent from said emulsion into said vapor phase,
b. effecting separation of the latex phase and the vapor phase from step (a) in a vacuum separator,
c. adding to the latex phase from step (b) cross-linking agent selected from the class consisting of the peroxide, hydroperoxide, azo, sulfur, selenium, and telluriam compound vulcanizing agents and elemental sulfur, selenium and telluriam, in the amount of from 0.1 to 10 parts by weight per 100 parts by weight of the polymer content of the latex,
d. flowing the latex phase containing the cross-linking agent through a constriction at a pressure, in the range of 1,000 to 10,000 p.s.i., to establish intimate association between the latex particles and the cross-linking agent, and
e. then subjecting the resulting latex phase to a cross-linking operation at a temperature below the maximum temperature for stability of the latex.

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PROCESS FOR CONVERTING COARSE AQUEOUS EMULSION INTO UNIFORM FINE EMULSION

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, is a continuation-in-part of Ser. Nos. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,467
Int. Cl. C08f 45/24
U.S. Cl. 260—29.6 XA 5 Claims

1. A process for converting a relatively coarse aqueous emulsion prepared with the aid of an emulsifying agent, which emulsion has as its discontinuous phase droplets of a solvent-polymer cement the polymer of which is essentially organic solvent soluble or dispersible and essentially water insoluble and the solvent of which is an organic solvent for the polymer, into a relatively uniform fine emulsion in which the cement droplets forming the discontinuous phase are of precursor latex particle size said process consisting essentially of:

a. converting essentially all of the coarse emulsion to a fine emulsion of precursor latex particle size of relatively wide particle size distribution by subjecting it to ultradispersion by a combination of mechanical, hydraulic and ultrasonic shear, impact, and vibrating phenonema, at a selected temperature in the range of 40°–200° F., and
b. then reducing the particle size distribution of the fine emulsion produced by step (a) by forcing said fine emulsion at a selected temperature in the range of 60° to 180° F. through a resiliently restricted orifice at a pressure within the range of 1,000 to 10,000 p.s.i.

3,892,699

PROCESS FOR INHIBITING MICROBIAL GROWTH IN WATER-BASED PAINTS

Guenter K. Weisse, Northford, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 73,240, Sept. 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 792,756, Jan. 21, 1969, abandoned. This application July 31, 1972, Ser. No. 276,865
Int. Cl. C09d 5/14; C08f 45/64
U.S. Cl. 260—29.6 MM 7 Claims

1. In a process for inhibiting the growth of bacteria and fungi in a water-based paint composition the improvement consisting essentially of incorporating in said paint composition an inhibitive amount of a biocidal composition comprising a mixture of a metal salt of 2-mercaptopyridine-1-oxide selected from the group consisting of zinc, zirconium and tin salts and a bromosalicylanilide selected from the group consisting of 3,4',5-tribromosalicylanilide, 4',5-dibromosalicylanilide and mixtures thereof in amounts of from about 1:1 to about 1:8 parts by weight of said 2-mercaptopyridine-1-oxide salt to said bromosalicylanilide.

3,892,700

METHOD OF TREATING STABLE POLYMER LATEX TO PRODUCE THEREFROM STABLE LATEX HAVING DECREASED VISCOSITY

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, which is a continuation-in-part of Ser. No. 621,997, March 7, 1967, Pat. No. 3,503,917, and a continuation-in-part of Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,463

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 R 4 Claims

1. The method of treating a stable polymer latex, said latex being a relatively viscous combination consisting essentially of an aqueous continuum with polymer particles dispersed therein with a latex stabilizing emulsifier, to produce therefrom a stable latex having a decreased viscosity and a reduced number of dispersed polymer particles therein, which method comprises:

1. first heating the stable latex to a temperature which is sufficiently high to sensitize the latex by substantially reducing the proportion of its emulsifier which is stabilizing the latex particles but which is below the maximum temperature for stability of the latex,
2. then reducing the temperature of the so heated latex by at least 20° F. at a sufficiently rapid rate to avoid restoration to its initial value of the proportion of emulsifier stabilizing the particles by the passage of time, and
3. then subjecting the resulting sensitized latex prior to such restoration to mechanical working to cause reduction of the number of particles therein by effecting controlled coalescence of the polymer particles of the sensitized latex;

said polymer being essentially organic solvent soluble and essentially water insoluble.

3,892,701

METHOD OF TREATING AQUEOUS EMULSION OF SOLVENT/POLYMER SOLUTION OF PRECURSOR LATEX PARTICLE SIZE TO FORM LATEX

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, Continuation-in-part of Ser. No. 621,997, March 7, 1967, Pat. No. 3,503,917, Continuation-in-part of Ser. No. 691,323, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,464

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 R 11 Claims

1. The method of treating an aqueous emulsion of solvent-/polymer solution of precursor latex particle size to form a latex, the solvent of the solution being an organic solvent for the polymer and itself or as an azeotrope with water having a boiling point below that of water at atmospheric pressure, and the polymer of the solution being essentially organic solvent soluble or dispersible and essentially water insoluble, and the emulsion being formed with an emulsifier, which method consist essentially of:

a. converting the emulsion to an aerosol of latex in an aqueous/solvent vapor phase, by dispersing it in a flow of steam at temperatures sufficiently high to vaporize solvent from said emulsion but not so high as to be detrimental to the stability of the emulsion, and in a quantity sufficient to vaporize substantially all the solvent from the emulsion into said vapor phase,

b. effecting separation of the latex phase and the vapor phase of the aerosol in a vacuum separator, whereby the latex phase contains only residual solvent,

c. increasing the particle size of the dispersed particles of the latex to lie in the upper part of the colloidal size range by flowing the residual solvent containing latex phase through a resiliently restricted orifice at a pressure in the range of 1,000 to 10,000 p.s.i., and

d. thereafter subjecting the resulting latex to a vacuum stripping and concentrating operation.

3,892,702

PROCESS FOR PRODUCTION OF AEROSOL LATEX WITH CENTRIFUGAL FORCE

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, which is a continuation-in-part of Ser. Nos. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1971, Ser. No. 177,465

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 R 2 Claims

1. An improvement in a process for producing latex, the process improved being of the type in which an aqueous emulsion of polymer/solvent solution which has been prepared with the aid of an emulsifying agent and has as its discontinuous phase droplets of such solution of precursor latex particle size, the polymer of such solution being essentially organic solvent soluble or dispersible and essentially water insoluble, and the solvent of such solution being an organic solvent for the polymer, is converted from an emulsion to a flow of aerosol of latex of the polymer in an aqueous/solvent vapor phase, and in which the aerosol droplets of latex are then coalesced into larger droplets in the flow to facilitate separation of the latex from the gaseous phase in a separating zone maintained at a reduced pressure which causes movement of the flow thereto, and

said improvement consisting essentially in subjecting the aerosol, on its way to the reduced pressure zone, to the action of centrifugal force sufficient for effecting such segregation or coalescence of the non-gaseous phase.

3,892,703

PROCESS FOR CONVERTING AQUEOUS EMULSION INTO AEROSOL OF LATEX OF POLYMER IN AQUEOUS/SOLVENT VAPOR PHASE

Oliver W. Burke, Jr., Ft. Lauderdale, Fla., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,622,127, which is a continuation-in-part of Ser. Nos. 621,997, March 7, 1967, Pat. No. 3,503,917, and Ser. No. 691,823, Dec. 19, 1967, abandoned. This application Sept. 2, 1972, Ser. No. 177,466

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 R 2 Claims

1. In a process for converting an aqueous emulsion prepared with the aid of an emulsifier, which emulsion has as its discontinuous phase droplets of solvent/polymer solution of precursor latex particle size, into an aerosol of latex of the polymer in an aqueous/solvent vapor phase, said polymer being essentially organic solvent soluble or dispersible and essentially water insoluble, and the solvent of the solution being an organic solvent for the polymer, and said solvent itself or as an azeotope with water having a boiling point lower than that of water at atmospheric pressure, the improvement which consists essentially of:

a. providing a moving flow of gas consisting essentially of steam as an initial continuous phase, said flow having a temperature within the range of temperatures sufficiently high to vaporize solvent from said emulsion but not so high as to be detrimental to the stability of the emulsion,

b. at a first station dispersing the aqueous emulsion into said initial continuous phase at a rate to effect only a partial vaporization of the solvent of said solvent polymer solution and a corresponding condensation of steam, and

c. at one or more stations downstream from said first station adding peripherally to said flow a further quantity of steam within said temperature range sufficient to effect

vaporization of substantially all the remaining solvent from said aqueous emulsion dispersion with a corresponding condensation of steam,

whereby the temperature of the emulsion particles and rate of evaporation of the solvent therefrom are controlled to facilitate maintainance of the stability of the aqueous emulsion during the stripping of the solvent to produce the aerosol of latex.

3,892,704

PROCESS FOR PRODUCING HARDENED CEMENT MATERIAL

Einosuke Higashimura, Tokyo, and Yasunobu Miura, Yokohama, both of Japan, assignors to Mitsubishi Rayon Co., Ltd., Japan

Division of Ser. No. 92,921, Nov. 25, 1970, abandoned. This application May 29, 1973, Ser. No. 364,417

Claims priority, application Japan, Nov. 26, 1969, 44-94780

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 S **11 Claims**

1. A process for producing a hardened cement material which comprises curing a cement material composed of a base material consisting of cement or of cement and aggregates; water for mixing the cement material; 2 to 30% by weight (based on the water) of a water-soluble ethenoid monomer; and 0.02 to 20% by weight (based on the water) of a water-soluble crosslinking monomer, with a catalytic quantity of a redox catalyst system in the presence of 2–40% by weight (based on the water) of at least one compound selected from the group consisting of watersoluble alkali metal sulfates and carbonates.

3,892,705

RAPID SETTING POLYURETHANES FROM DIOLS AND POLYFUNCTIONAL ISOCYANATES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 358,245, May 7, 1973, Pat. No. 3,801,532, which is a continuation-in-part of Ser. No. 205,687, Dec. 7, 1971, abandoned. This application Dec. 7, 1973, Ser. No. 422,825

Int. Cl. C08g *51/34*

U.S. Cl. 260—30.4 N **20 Claims**

1. A rigid, non-cellular composition having a density of at least about 1 gram/cc, a percent elongation of less than 100, and which is demoldable without the application of an external source of heat, within about 5 minutes after admixture of the components of the composition which is the reaction product of a polyurethane-forming composition comprising

A. a dihydroxyl-containing compound having a hydroxyl equivalent weight of less than about 250;

B. an organic polyisocyanate having an NCO functionality of at least about 2.5;

C. a liquid modifier compound having a boiling point of at least about 150°C or mixture of such compounds and which moderates the reaction exotherm between components (A), (B) and (D) without sustantial reaction therewith selected from cyclic polyethers and mixtures thereof, said polyethers being cyclic tetramers and above of ethylene oxide, propylene oxide, butylene oxide or epichlorohydrin; and

D. an organometallic catalyst; wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1, component (C) is present in quantities of from about 10 to about 50 percent by weight of the combined weights of components (A), (B) and (C); and component (D) is present in quantities of from about 0.1 to about 10 percent by weight of the combined weight of components (B), (B) and (C).

3,892,706

METHOD OF PROCESSING REFUSE FOR CONVERSION INTO SHAPED BODIES

Raimund Jetzer, Nussbaumen, Switzerland, assignor to Jetzer Engineering AG, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 7,996, Feb. 2, 1970, abandoned. This application Aug. 9, 1972, Ser. No. 279,171

Claims priority, application Switzerland, Feb. 6, 1969, 1803/69; June 12, 1972, 8749/72

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 R **31 Claims**

1. A method of processing refuse for conversion into shaped bodies, comprising the steps of subjecting a quantity of refuse containing liquid and solid constituents to aerobic decomposition so as to liberate the fiber content of said refuse; treating the resulting product to sterilize said product, adjust the moisture content of said product to within a predetermined range and convert said product into a mass of substantially dry heterogeneous fiber-containing matter; segregating said mass into a plurality of fractions including one fraction containing the matter of largest particle size, the remainder of said fractions containing the matter of smaller particle size and including a fibrous component and another component; separating said fibrous component from said other component; and converting said fibrous component into at least one shaped body.

3,892,707

SILICONE ELASTOMER COMPOSITIONS

Kunio Itoh, and Naohiko Harada, both of Annaka, Japan, assignors to Shinetsu Chemical Company, Japan

Filed May 10, 1974, Ser. No. 468,982

Claims priority, application Japan, May 15, 1973, 48-53902

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB **9 Claims**

1. A silicone elastomer composition consisting essentially of (a) 100 parts by weight of diorganovinylsilyl-terminated diorganopolysiloxane having a viscosity of from 100 to 500,000 cs. at 25°C, represented by the general formula

$$CH_2=CH-\underset{\underset{R}{|}}{SiO}-\left(\underset{\underset{R'}{|}}{SiO}\right)_n-\underset{\underset{R}{|}}{Si}-CH=CH_2$$

where R and R′ each are unsubstituted or substituted monovalent hydrocarbon groups and n is a possitive integer, (b) from 0.5 to 10 parts by weight of an unsaturated double bond-containing isopropenoxysilane represented by the general formula

$$\left(\underset{\underset{CH_2=CO-}{|}}{CH_3}\right)_x\underset{\underset{-SiR_{3-x}}{|}}{R''}$$

where R is as defined above, R″ is a monovalent organic group having an unsaturated double bond bonded to a silicon atom by the Si-C linkage, and x is 1, 2 or 3, or a product of the partial hydrolysis-condensation thereof, (c) an organohydrogenpolysiloxane having at least two Si—H linkages in a molecule, represented by the general formula

$$(R)_a(H)_bSiO_{\frac{4-a-b}{2}}$$

where R is as defined above, a is from 1 to 2 and b is from 0.1 to 1.2 with the proviso that $(a+b)$ is from 2.0 to 2.7, in an amount such that the Si-bonded hydrogen atoms are given in a ratio of from 0.5 to 1.2 per vinyl group directly bonded to the silicon atom in component (a), and (d) platinum or a platinum compound in a catalytic amount.

3,892,708
FLUIDISABLE POWDER BASED ON A HEAT-STABLE BIS-IMIDE RESIN

Michel Cronenberger, Lyon; Serge Laurent, Bron, and Maurice Mallet, Lyon, all of France, assignors to Rhone-Poulenc, S.A., Paris, France

Continuation of Ser. No. 285,216, Aug. 31, 1972, abandoned, which is a continuation of Ser. No. 91,610, Nov. 20, 1970, abandoned. This application June 17, 1974, Ser. No. 480,279

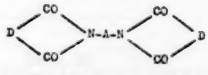
Claims priority, application France, Nov. 24, 1969, 69.40392; Oct. 1, 1970, 70.35524

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N **12 Claims**

1. A fluidisable powder in the form of particles of dimensions between 5 and 200μ consisting of a mixture comprising:

a. 5 to 95 percent by weight of a prepolymer obtained by heating at between 50° and 250°C., an N,N'-bis-imide of an unsaturated discarboxylic acid of general formula



(I)

in which D represents a divalent radical containing a carbon-carbon double bond and A represents a divalent radical containing 2 to 30 carbon atoms, and a di-primary diamine of general formula:

$$H_2N - B - NH_2 \qquad (II)$$

in which B represents a divalent radical containing 2 to 30 carbon atoms, and

b. 95 to 5 percent by weight of glass micro-spheres and/or mica particles.

3,892,709
ALDEHYDE-POLYAMINE OR ALDEHYDE-POLYAMINE-AROMATIC COMPOUND CONDENSATION RESIN ADSORBENT FOR HEAVY METALS AND HEAVY METALLIC COMPOUNDS

Nakaaki Oda; Shozo Iwasa; Mitsuru Idohara; Yoshio Horie; Takeo Fukui, and Naomichi Takasaka, all of Takaoka, Japan, assignors to Nippon Soda Company, Limited, Japan

Division of Ser. No. 209,573, Dec. 20, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,680

Int. Cl. C08g *51/04*

U.S. Cl. 260—39 R **14 Claims**

1. A powder cement composition for fixing heavy metals or heavy metallic compounds, which comprises 99.9 to 50% of cement and 0.1 to 50% of an adsorbent prepared by a reaction between an aldehyde and a polyamine selected from the group consisting of thiourea and rubeanic acid.

3,892,710
ABS PLASTIC COMPOSITIONS CONTAINING HALOGENATED ARYL FLAME RETARDANTS

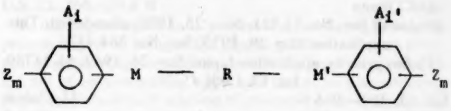
Arnold L. Anderson, and Robert J. Nulph, both of Alma, Mich., assignors to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,800The portion of the term of this patent subsequent to July 16, 1991, has been disclaimed.

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **29 Claims**

1. A plastic composition containing acrylonitrile-butadiene-styrene polymer having incorporated therein a flame retardant which is a halogenated aryl compound having the formula:



wherein Z is selected from the group consisting of bromine or chlorine; m and m' are integers having a value of 1–5; i and i' are integers having a value of 0–2; M and M' are each independent and are selected from the group consisting of oxygen, nitrogen or sulfur with the proviso that M and M' cannot concurrently be oxygen in both cases and where M and/or M' is nitrogen, the formula is

, A is selected from the group consisting of chlorine, cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo- benzyl; and R is selected from the group consisting of

(a) alkylene group having from one to six carbon atoms

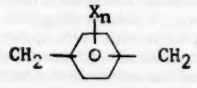
(b) $CH_2—CH(OH)—CH_2$

(c) $CH_2—CH(CH_2OH)—CH_2$

(d) $(CH_2)_w— O— (CH_2)_w$

where $w = 1–6$

(e)



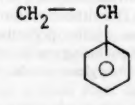
where

X = H, Cl, Br

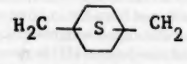
$n = 4$

(f) $CH_2— C(O)— CH_2$

(g)



(h)



where S = saturated ring

3,892,711

POLY(PHENYLENE OXIDE) PLASTIC COMPOSITIONS CONTAINING BIS-PHENOXY FLAME RETARDANTS

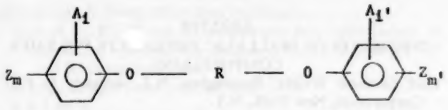
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,857The portion of the term of this patent subsequent to May 14, 1991, has been disclaimed.

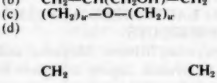
Int. Cl. C08q *51/60*

U.S. Cl. 260—45.9 R **14 Claims**

1. A plastic composition containing poly(phenylene oxide) having incorporated therein an effective amount of a flame retardant which is a compound having the formula:



wherein Z is selected from the group consisting of bromine or chlorine; *m* and *m'* are integers having a value of 1–5; *i* and *i'* are integers having a value of 0–2; A is selected from the group consisting of cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl and halobenzyl; and R is selected from the group consisting of

(a) $CH_2—CH(OH)—CH_2$
(b) $CH_2—CH(CH_2OH)—CH_2$
(c) $(CH_2)_w—O—(CH_2)_w$ where w = 1–6
(d)  where X = H, Cl, Br; n = 4

(e) $CH_2—C(O)—CH_2$
(f) $CH_2—CH$

(g) N_sC CH_2 where S = Saturated ring

3,892,712

PROCESS FOR PRODUCED STABILIZED OLEFIN

Sergio Arrighetti; Sebastiano Cesca; Giuseppe Ghetti, and Eugenio Vajna, all of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed July 28, 1972, Ser. No. 275,936

Claims priority, application Italy, July 31, 1971, 27014/71

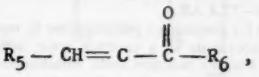
Int. Cl. C08f *15/40, 27/18*

U.S. Cl. 260—66 **7 Claims**

1. A process for preparing an olefin terpolymer which is stabilized against oxidative ageing, which comprises reacting in a hydrocarbon solvent and at a temperature between 0° and 150°C.

a. a terpolymer of ethylene, another alpha olefin, and a polyene which is a methyl-cyclopentadienyl norbornenyl methane having in addition to a double bond for participating in the terpolymer formation, conjugated double bonds in the cyclopentadienyl substituent, with

b. a dienophilic agent of the general formula:



wherein R_5 can be hydrogen or alkyl, aryl, cycloalkyl or arylalkyl radicals having up to 8 carbon atoms and R_6 can be an alkyl, alkenyl, cycloalkyl, aryl or arylalkyl radical having up to 8 carbon atoms.

3,892,713

CURE OF POLYURETHANES WITH MIXED CURATIVES COMPRISING HYDROXY TERTIARY AMINES

John Burkus, Woodbridge; Robert G. Leclerc, Wolcott, and Louis V. Esposito, Naugatuck, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,646

Int. Cl. C08g *22/38*

U.S. Cl. 260—75 NC **11 Claims**

1. A method of curing an isocyanate terminated polyurethane prepolymer comprising admixing therewith, in amount sufficient to cure the prepolymer, (A) hydroquinone bis (beta-hydroxyethyl) ether or (B) 1,4-butanediol, with (C) phenyl diethanol amine and (D) triisopropanol amine, the ratio of (C) to (D) being from 98:2 to 50:50 by weight, the equivalents ratio of (A) to (C) plus (D) being from 17:1 to 2.5:1, and the equivalents ratio of (B) to (C) plus (D) being from 18:1 to 2.5:1, and subjecting the mixture to curing conditions.

3,892,714

HYDROXY COPOLYMER REACTED WITH A LACTONE AND POLYISOCYANATE CROSSLINKED

Keith George Sampson, Clophill; Victor Frederick Jenkins, St. Albans, and Anthony John Bunker, Kempston, all of England, assignors to Laporte Industries Limited, London, England

Filed Dec. 4, 1972, Ser. No. 311,502

Claims priority, application United Kingdom, Dec. 9, 1971, 57175/71

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 CR **7 Claims**

1. A polymeric composition comprising:

a. from 5% to 85% by weight, main chains comprising a copolymer of at least two ethylenically unsaturated monomers at least one of which is an ethylenically unsaturated hydroxy alkyl ester having the formula $CH_2=CR_1—COOR_2$ in which R_1 is hydrogen or an alkyl group and R_2 is an alkyl group to which at least one methylol group is attached

b. from 5 to 85% by weight, side chains comprising chains derived from an epsilon caprolactone attached to oxygen remnants of hydroxyl groups on said copolymer and

c. from 10% to 40% by weight linking chains comprising di-isocyanate which cross-link said side chains.

3,892,715

POLYURETHANES WITH A NEW CATALYST SYSTEM

Yves Bonin, and Jean Robin, both of Lyon, France, assignors to Rhone-Poulenc, S.A., Paris, France

Filed Aug. 3, 1973, Ser. No. 385,344
Claims priority, application France, Aug. 7, 1972, 72.28433
Int. Cl. C08g 22/34, 22/40
U.S. Cl. 260—77.5 AB 5 Claims

1. Process for preparing a polyurethane by reacting a polyol and a polyisocyanate in a reaction zone, which comprises introducing into the reaction zone, simultaneously but separately from one another, the polyol mixed with a catalytic amount of acetylacetone and the polyisocyanate to which has been added a catalytic amount of a ferric halide, at least one mol of acetylacetone being used per gram atom of iron in the ferric halide.

3,892,716

METHOD FOR MAKING CARBOXY FREE POLYAMIDE ACID SALTS DERIVED THEREFROM

Edith M. Boldebuck, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 148,154, May 28, 1971, Pat. No. 3,737,478. This application Feb. 5, 1973, Ser. No. 329,428The portion of the term of this patent subsequent to June 5, 1990, has been disclaimed.
Int. Cl.[2] C08G 69/48
U.S. Cl. 260—78 TF 2 Claims

1. A method for producing resinous polyamideimide substantially free of carboxy radicals and having from 1 to 2.3 meq. of polyamide acid salt radicals per gm. of polyamideimide, which comprises, adding a base to a resinous, carboxy-free polyamideimide at a temperature up to 150°C., while the polyamideimide is substantially dissolved in solvent comprising an inert aprotic organic solvent, where the base is characterized by having an ionization constant greater than 10^{-2} in water at 25°C., and is employed in the resulting mixture at a concentration which is at least sufficient to neutralize any carboxy radicals which may be present and provide a ratio of moles of base, per mole of imide functionality of the polyamideimide having a value of from about 0.01 to about 1.2, whereby resinous imide values are converted to amide acid salt values.

3,892,717

PROCESS FOR PRODUCING MALEIC ACID MODIFIED POLYMERIZED ETHYLENE WAX

Akikazu Mori; Hideo Nara, both of Iwakuni; Toshiki Kataoka, Yamaguchi; Teiji Kato; Toru Tomoshige, both of Iwakuni; Katsumi Funakoshi, and Toshio Kobayashi, both of Otake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 146,849, May 25, 1971, abandoned. This application July 9, 1973, Ser. No. 377,428
Int. Cl. C08f 27/00
U.S. Cl. 260—78.4 D 11 Claims

1. A process for producing a waxy maleic acid modified ethylene polymer comprising polymerizing ethylene in a saturated hydrocarbon as a polymerization solvent in the presence of hydrogen, an α-olefin or mixture thereof using as a catalyst a halogen compound of titanium, vanadium or mixtures thereof supported on a carrier composed of a hydrocarbon-insoluble magnesium-containing compound, and an organoaluminum compound under the following conditions:

a. the atomic ratio of aluminum to titanium, vanadium or mixtures thereof in the catalyst being 1–100:1;

b. the concentration of the catalyst in the polymerization solvent being such that the atom amount of the aluminum in the catalyst is 0.01 to 10 millimoles per liter of the polymerization solvent;

c. ethylene, hydrogen and α-olefin being fed in amounts such that the vapor phase in the polymerization vessel excepting the vapor portion of the solvent consists of 5 to 90 molar percent of hydrogen, 0 to 35% of α-olefin and the remainder being ethylene; and

d. the polymerization temperature being a temperature at which the resultant polymer is present as liquid, and the polymerization pressure being from 20 to 100 kg/cm^2;

to form said waxy ethylene polymer having a density of 0.85 to 0.98 g/cm^3 and a viscosity average molecular weight of 400 to 20,000; separating said waxy ethylene polymer from the polymerization solvent; feeding oxygen or an oxygen-containing gas into a melt of said waxy ethylene polymer at a temperature above the melting point of said ethylene polymer and up to 140°C to obtain an oxidized ethylene polymer containing peroxide groups and an oxygen content of 0.1 to 1% by weight; and reacting said oxidized ethylene polymer with a maleic acid compound in the absence of oxygen at 140°C. to 180°C.

3,892,718

INHIBITION OF DIALLYLIC PHTHALATE POLYMER COMPOSITIONS

Carl Leonard Wright, Pennington, N.J., assignor to FMC Corporation, New York, N.Y.

Filed June 1, 1973, Ser. No. 366,176
Int. Cl. C08f 3/60
U.S. Cl. 260—78.4 UA 4 Claims

1. A thermosetting diallylic phthalate prepolymer composition comprising (a) a diallylic phthalate prepolymer selected from the group consisting of diallyl isophthalate and diallyl orthophthalate prepolymers, (b) from about 0.001 to 0.1 percent by weight phenothiazine based on the weight of prepolymer, and (c) a peroxide catalyst in sufficient amount to convert the diallylic phthalate prepolymer to the thermoset state at elevated temperatures.

3,892,719

PROCESS FOR PRODUCING LACTONIZED ACRYLIC POLYMER PRODUCTS

Yasuo Matsumura; Kunio Maruyama; Minoru Akiyama, and Katsutoshi Kanetsuki, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Japan

Continuation of Ser. No. 203,886, Dec. 1, 1971, abandoned. This application Oct. 11, 1973, Ser. No. 405,638
Claims priority, application Japan, Dec. 29, 1970, 45-125336
Int. Cl. C08f 15/02, 27/14
U.S. Cl. 260—79.3 MU 8 Claims

1. In a method for producing a lactonized acrylic product by treating an acrylic copolymer containing at least 50 mol percent acrylonitrile and at least one monomer having a hydroxyl group or capable of forming a hydroxyl group or a fiber or film shaped from such copolymer with an acid medium containing 40 percent or less of an acid selected from the group consisting of an organic acid, an inorganic acid and mixtures thereof having a pH not higher than 2, the improvement comprising adding to said acid medium at least one compound selected from the group consisting of oxyacids of chlorine and the alkaline metal, alkaline earth or ammonium salts thereof in an amount of at least 0.01 mol/liter.

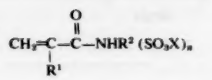
3,892,720

POLYMERIZABLE HYDROXY-CONTAINING ESTERS OF AMIDO-SUBSTITUTED SULFONIC ACIDS

Richard William Jahnke, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Division of Ser. No. 375,257, June 29, 1973, abandoned. This application Jan. 14, 1974, Ser. No. 433,321
Int. Cl. C08f 3/92
U.S. Cl. 260—79.5 C 12 Claims

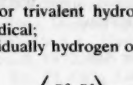
1. An addition polymer of a compound or mixture of compounds of the formula



wherein: R^1 is hydrogen, halogen or a lower alkyl or substituted lower alkyl radical;

R^2 is a divalent or trivalent hydrocarbon or substituted hydrocarbon radical;

each "X" is individually hydrogen or



at least one X being other than hydrogen;

each of R_3, R^4, R^5 and R^6 is hydrogen or a hydrocarbon or substituted hydrocarbon radical, at least one of R^3, R^4, R^5 and R^6 being hydrogen;

m is an integer from 1 to 10, and

n is 1 or 2;

wherein the substituents on said substituted radicals do not alter significantly their character or reactivity.

3,892,721
COPOLYMERIZED HARD PLASTIC HYDROGEL COMPOSITIONS

Robert Gustafson, 5129 Louis Ave., Chicago Ill. 60625

Continuation-in-part of Ser. No. 168,769, Aug. 3, 1971, Pat. No. 3,728,315. This application Nov. 10, 1972, Ser. No. 305,303

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.75 **1 Claim**

1. A cross-linked polymerized composition comprising a copolymer including from about 10 percent to about 35 percent by weight of triethylene glycol dimethacrylate, from about 5 percent to about 35 percent by weight of hydroxy ethyl methacrylate, and from about 55 percent to about 70 percent of n-butyl methacrylate or ethyl methacrylate.

3,892,722
METHOD FOR PREPARING STEREOREGULAR 1,4-TRANSPOLYMERS OF 2-ALKYL- BUTADIENES-1,3 OR STEREOREGULAR 1,4-TRANSCOPOLYMERS OF 2-LKYLBUTADIENES-1,3 WITH BUTADIENE-1,3

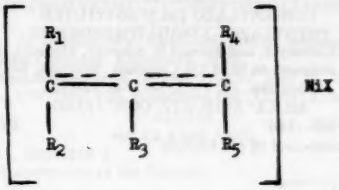
Boris Davidovich Babitsky, ulitsa Krasnogo Kursanta, 7, kv. 9; Vadim Nikolaevich Beresnev, ulitsa Pulkovskaya, 3, kv. 164; Tatyana Georgievna Bolshakova, ulitsa Lensoveta, 87, kv. 85; Natalya Anatolievna Buzina, prospekt Slavy, 16, kv. 129, all of Leningrad; Valentin Alexandrovich Vasiliev, ulitsa Gorskaya, 13. Leningradskaya oblast; Nadezhda Andreevna Kalinicheva, ulitsa Zaitseva, 17/23, kv.26, Leningrad; Vitaly Abramovich Kormer, ulitsa Zheleznovodskaya, 62, kv. 2, Leningrad; Mark Iosifovich Zobach, prospekt Annikova, 28, kv. 52, Leningrad; Ivan Ignatievich Radchenko, Apraksin pereulok, 11, kv. 2, Leningrad, and Taisiya Danilovna Khrustaleva, ulitsa Voskova, 16, kv. 26, Leningrad, all of U.S.S.R.

Filed June 15, 1973, Ser. No. 370,472

Int. Cl. C08d *1/18, 3/08*

U.S. Cl. 260—82.1 **4 Claims**

1. A method for preparing polymers selected from the group consisting of stereoregular 1,4-trans-polymers of 2-alkylbutadienes-1,3 and stereoregular 1,4-trans copolymers of 2-alkylbutadienes-1,3 with butadiene-1,3, consisting essentially of polymerizing monomers selected from the group consisting of 2-alkylbutadienes-1,3 and mixtures of 2-alkylbutadienes-1,3 with butadiene-1,3 in an aqueous medium in the presence of π-allyl complexes of nickel having the formula



where R_1, R_2, R_3, R_4 and R_5 are each selected from the group consisting of hydrogen, alkyl, aryl, and halide, and X is a singly charged anion, and subsequently isolating the main products from the reaction mixture.

3,892,723
P-GLU-TRP-SER-TYR-D-PGL-LEU-ARG-PRO-GLY-NH_2 AND INTERMEDIATES

Wayne A. McKinley, Wallingford, and Dimitrios Sarantakis, Audubon, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Feb. 4, 1974, Ser. No. 439,490

Int. Cl. C07c *103/52;* **A61k** *27/00*

U.S. Cl. 260—112.5 **5 Claims**

1. A compound selected from the class consisting of L-p-Glu-L-Trp-L-Ser-L-Tyr-D-Pgl-L-Leu-L-Arg-L-Pro-Gly-NH_2 (I)

and

R^4-L-p-Glu-L-Trp-L-Ser(R^3)-L-Tyr(R^2)-D-Pgl-L-Leu-L-Arg(N^G-R^1)-L-Pro-Gly-X (III)

and its non-toxic salts; wherein

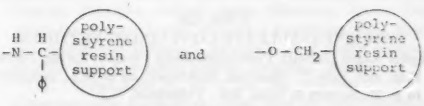
R^1 is a protecting group for the N , N and N nitrogen atoms of arginine selected from the group consisting of nitro, tosyl, benzyloxycarbonyl, adamantyloxycarbonyl and tert-butyloxycarbonyl or R^1 is hydrogen;

R^2 is a protecting group for the phenolic hydroxyl group of tyrosine selected from the group consisting of acetyl, tosyl, benzoyl, tert-butyl, tetrahydropyranyl, trityl, benzyl, 2,6 dichlorobenzyl, p-bromobenzyloxycarbonyl and benzyloxycarbonyl or R^2 is hydrogen;

R^3 is a protecting group for the alcoholic hydroxyl group of serine and is selected from the group consisting of acetyl, tosyl, benzoyl, tetrahydropyranyl, tert-butyl, trityl, 2,6 dichlorobenzyl and benzyl or R^3 is hydrogen;

R^4 is selected from the group consisting of hydrogen or an α-amino protecting group, with the proviso that at least one of R^1, R^2 and R^3 is a protecting group; and

X is selected from the group consisting of NH_2, OH, O-(lower)alkyl, O-benzyl and an anchoring bond linked to a solid polystyrene resin represented by one of the formula



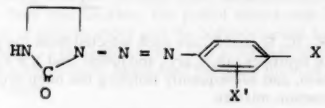
wherein said polystyrene resin is cross linked through the phenyl group on each second carbon atom of the alkyl chain of said polystyrene and wherein "Pgl" means phenylglycyl.

3,892,724
1-(PHENYLAZO OR SUBSTITUTED PHENYLAZO)-2-IMIDAZOLIDINONES

Willy D. Kollmeyer, and Samuel B. Soloway, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 26, 1973, Ser. No. 326,734
Int. Cl.[2] A01N 9/22; C07C 115/00
U.S. Cl. 260—140 4 Claims

1. A compound of the formula



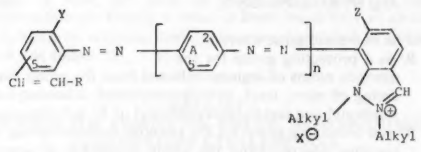
where X is independently hydrogen, fluorine, chlorine, bromine, nitro, or trifluoromethyl; and X′ is hydrogen.

3,892,725
UNSATURATE CONTAINING AZO INDAZOLIUM DYESTUFFS

Jean-Pierre Henri Stiot, Les Elboeuf, and Claude Marie Henri Emile Brouard, Sotteville, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Mar. 22, 1973, Ser. No. 343,763
Claims priority, application France, Mar. 24, 1972, 72.10332
Int. Cl. C09b 31/14
U.S. Cl. 260—157 5 Claims

1. A dyestuff of the formula:



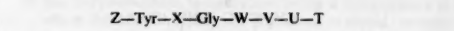
in which the group CH=CH—R is fixed in the position 4 or 5, R represents CN, $CONH_2$ or COO-alkyl, wherein the alkyl group contains 1 to 5 carbon atoms, Y represents H or Cl, the benzene nucleus A is unsubstituted or substituted in the 2 and/or 5 positions by alkyl or alkoxy groups containing 1 to 5 carbon atoms, *n* is equal to 0 or 1, Z represents an OH or NH_2 group, the alkyl groups of the indazolium nucleus contain 1 or 2 carbon atoms and X represents a monovalent anion.

3,892,726
TYROSINE-O-SULFATE CONTAINING PEPTIDES

Miguel Angel Ondetti, Princeton; Josip Pluscec, Ewing Township, and John T. Sheehan, Middlesex, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 828,368, May 27, 1969, abandoned. This application Dec. 4, 1972, Ser. No. 312,150
Int. Cl. C07c 103/52; A61k 37/00
U.S. Cl. 260—112.5 10 Claims

1. A compound having the formula



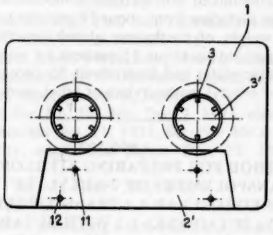
wherein
Z is Ala, Abu, or β-Asp or R-Asp wherein R is hydrogen, alkanoyl of from 2 to 16 carbon atoms, t-butyloxycarbonyl, benzyloxycarbonyl, fumaryl, maleyl, or succinyl;
X is Met, Leu, Nle or Abu,
W is Trp or D-Trp;
V is Met, Leu, Nle or Abu;
U is Asp, Ala or Glu;
T is Phe-NH_2 or D-Phe-NH_2;
and pharmaceutically acceptable ammonium, alkali metal or alkaline earth metal salts thereof provided that only one of X and V is Met when the other is Leu, Nle, or Abu, that all optically active amino acid residues are of the L-configuration unless otherwise indicated, and that R is not H when the compound has the formula

R-L-Asp-L-Tyr-L-Met-Gly-L-Trp-L-Met-L-Asp-L-Phe-NH_2.

3,892,727
TWO PIECE CARTRIDGE FOR MAGNETIC TAPES

Jose Antonio Arias Carvajal, 1010 Opalocka Blvd., Opalocka, Fla. 33053, and Luis-Martin Mena Sanchez, San Ambrosio 8, Madrid, Spain

Filed Jan. 3, 1974, Ser. No. 430,514
Claims priority, application Spain, Feb. 13, 1973, 188692/73
Int. Cl. G11b 23/02
U.S. Cl. 360—132 7 Claims



1. A two-piece cartridge for magnetic tapes for use in a cassette cartridge receiving recording-reproducing machine, said two-piece cartridge comprising:
a portable tape-containing element housing therein a pair of tape reels and a magnetic tape extending between and wrapped around said tape reels, said portable element having therein windows adjacent said tape for receipt of magnetic heads of a recording-reproducing machine when said cassette is operatively positioned therein, the overall dimensions of said portable element being substantially smaller than the overall dimensions of a conventional cassette cartridge;
an auxiliary element comprising a body having overall dimensions equal to those of a conventional cassette cartridge, said auxiliary element having therein a recess dimensioned to receive said portable element, said auxiliary element having therein a pair of reel driving means, each of which has means thereon for receiving driving movement from said recording-reproducing machine when said auxiliary element is positioned thereon; and
said portable element having therein openings, whereby when said portable element is operatively positioned in said recess of said auxiliary element, said reel driving

means extend into said openings into driving engagement with said reels.

3,892,728

QUINIDINE POLYMANURONATE

Gonzalo Cobo Barrachina, Madrid, Spain, assignor to Laboratorios Berenguer Beneyto S.A., Madrid, Spain

Filed Dec. 8, 1972, Ser. No. 313,264
Int. Cl. C07g 3/00
U.S. Cl. 260—209 R 12 Claims

12. A quinidine salt of polymanuronic acid having the following characteristics:

a. fine powder of yellowish color,

b. stable in air at from ambient temperature to about 150°C,

c. empirical formula $(C_{20}H_{32}O_8N_2)_x$, wherein x is about 1360,

d. quinidine content of about 60.46% by weight,

e. infrared spectrum indicating a peak at 1615 cm^{-1}, with a broad band at 1710 cm^{-1},

f. soluble in 50% methanol, 50% ethanol and hot propylene glycol, and insoluble in methanol, 96% ethanol, chloroform, cold propylene glycol and acetone,

g. total decomposition at 190°C,

h. rotation of +77.3° (propylene glycol, c=0.5).

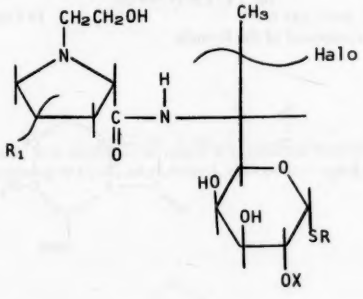
3,892,729

1'(BETA-HYDROXYETHYL)-1'-DEMETHYL CLINDAMYCIN 2-PHOSPHATES

Robert D. Birkenmeyer, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 156,099, June 23, 1971, Pat. No. 3,787,390. This application Dec. 17, 1973, Ser. No. 425,149
Int. Cl. C08b 19/00
U.S. Cl. 260—210 R 3 Claims

1. A compound of the formula:



or the acid addition salts thereof wherein Halo is chlorine, bromine, or iodine, X is

the zwitterion thereof or the hemi-salt thereof, inclusive; R is alkyl of not more than 4 carbon atoms; and R_1 is alkyl of not more than 8 carbon atoms.

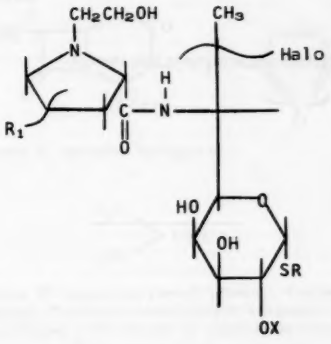
3,892,730

1'-(β-HYDROXYETHYL)-1'-DEMETHYL CLINDAMYCIN 2-ACYLATES

Robert D. Birkenmeyer, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 156,099, June 23, 1971, Pat. No. 3,787,390. This application Dec. 17, 1973, Ser. No. 425,150
Int. Cl. C08b 19/00
U.S. Cl. 260—210 R 3 Claims

1. A compound of the formula:



or the acid addition salts thereof wherein Halo is chlorine, bromine, or iodine, X is an acyl radical of an aliphatic carboxylic acid having from 2 to 18 carbon atoms, inclusive; R is alkyl of not more than 4 carbon atoms; and R_1 is alkyl of not more than 8 carbons.

3,892,731

SOLVENTS FOR AND PURIFICATION OF CHITIN

Paul Rolland Austin, Wilmington, Del., assignor to University of Delaware, Newark, Del.

Filed Nov. 23, 1973, Ser. No. 418,441
Int. Cl.[2] C07H 5/06
U.S. Cl. 260—211 R 2 Claims

1. A solution of chitin in di- or tri-chloracetic acid.

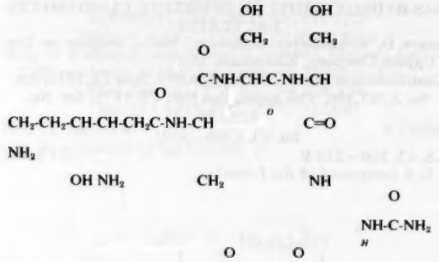
3,892,732

ANTIBIOTIC TUBERACTINOMYCIN-N AND PROCESS FOR PRODUCTION THEREOF

Jinnosuke Abe, Shizuoka; Tetsuo Watanabe, Kanagawa; Akiho Nagata, Shizuoka; Takuji Ando, Shizuoka; Teruo Take, Shizuoka; Rokuro Izumi, Shizuoka; Toshiharu Noda, Shizuoka, and Kazuo Matsuura, Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed June 30, 1971, Ser. No. 158,488
Claims priority, application Japan, June 30, 1970, 45-56467
Int. Cl. C07d 57/00; C07c 103/52
U.S. Cl. 260—239.3 R 1 Claim

1. An antibiotic substance selected from the group consisting of tuberactinomycin-N having the formula



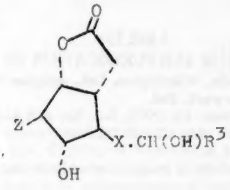
and therapeutically acceptable salts thereof.

3,892,733
CYCLOPENTANE DERIVATIVES

Edward Douglas Brown, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 17, 1973, Ser. No. 324,429
Claims priority, application United Kingdom, Feb. 4, 1972, 5353/72
Int. Cl. C07d *5/04*
U.S. Cl. 260—240 R **13 Claims**

1. A cyclopentane derivative of the formula:-



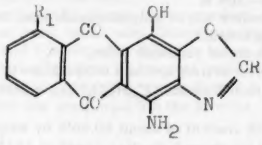
wherein X is ethylene or trans-vinylene, Z is chlorine, bromine or iodine and R^3 is alkyl or alkenyl of 4 to 10 carbon atoms, or a group $—A^1OR^4$ wherein A^1 is alkylene of 1 to 9 carbon atoms and R^4 is alkyl of 1 to 9 carbon atoms or cycloalkyl of 5 to 7 carbon atoms, A^1 and R^4 together containing not more than 10 carbon atoms, or R^3 is a group $-A^2R^5$ wherein A^2 is alkylene of 2 to 5 carbon atoms which is unsubstituted or is substituted by 1 or 2 alkyl of 1 to 4 carbon atoms and R^5 is aryl which is unsubstituted or is substituted by halogen; nitro; alkyl, halogenoalkyl or alkoxy each of 1 to 3 carbon atoms; or dialkylamino wherein each alkyl is of 1 to 3 carbon atoms, or R^3 is a group $—A^3.A^4.R^6$ wherein A^3 is alkylene of 1 to 3 carbon atoms bearing 0,1 or 2 alkyls of 1 to 3 carbon atoms, A^4 is oxygen, sulphur, sulphinyl or alkylimino of up to 4 carbon atoms, and R^6 is aryl, benzyl or furfuryl which is unsubstituted or substituted by hydroxy; nitro; phenyl; halogen; alkyl, alkenyl, halogenoalkyl, alkoxy, or alkenyloxy each of 1 to 4 carbon atoms; or dialkylamino wherein each alkyl is of 1 to 3 carbon atoms.

3,892,734
NOVEL ANTHRAQUINO[(3,2-d)]OXAZOLE DYES AND COLORING AGENTS

Ichiro Okubo, and Michihiro Tsujimoto, both of Tokyo, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation-in-part of Ser. No. 144,658, May 18, 1971, abandoned. This application Mar. 26, 1974, Ser. No. 455,035
Claims priority, application Japan, May 19, 1970, 45-42107
Int. Cl. C07d *85/48*
U.S. Cl. 260—240 D **14 Claims**

1. Anthraquino[3,2-d] oxazole having the formula:



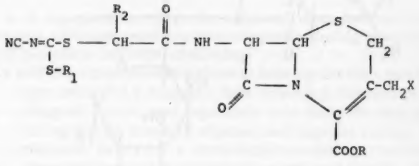
wherein R is alkyl having 1 to 17 carbon atoms, cyclohexyl, phenyl styryl or substituted phenyl or styryl wherein the benzene nucleus thereof is substituted with methyl or chlorine, R_1 is hydrogen when R is phenyl, styryl, or substituted phenyl or styryl, and is hydrogen or amino when R is alkyl having 1 to 17 carbon atoms or cyclohexyl.

3,892,735
CYANODITHIOCARBAMIC ACID DERIVATIVES OF CEPHALOSPORINS

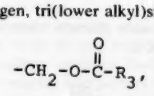
Uwe D. Treuner, and Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 5, 1973, Ser. No. 337,805
Int. Cl.[2] C07D *501/20*
U.S. Cl. 260—243 C **10 Claims**

1. A compound of the formula



wherein R is hydrogen, tri(lower alkyl)silyl,



alkali metal, alkaline earth metal or lower alkylamine; R_1 is lower alkyl or phenyl-lower alkyl; R_2 is hydrogen, lower alkyl, phenyl, thienyl, furyl or pyridyl; R_3 is lower alkyl, phenyl or phenyl-lower alkyl; and X is hydrogen, hydroxy, lower alkanoyloxy, lower alkoxy or lower alkylthio.

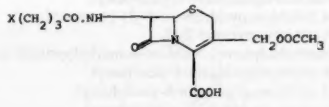
3,892,736
PROCESS FOR SELECTIVE BLOCKING OF THE CARBOXYL GROUP ON THE 7-POSITION OF (6R, 7R)--ACETOXYMETHYL-7-(4-CARBOXYBUTANAMIDO)-CEPH-3-EM-4-CARBOXYLIC ACID

David Cedric Humber, Greenford, and Anita Lynda Lucrece Lynd, Southall, both of England, assignors to Glaxo Laboratories Limited, Greenford, England

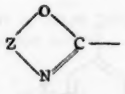
Filed June 12, 1972, Ser. No. 261,598
Claims priority, application United Kingdom, June 17, 1971, 28566/71
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 5 Claims

1. In a process for the selective blocking of the 7-side chain carboxyl group of (6R, 7R)-3-acetoxymethyl-7-(4-carboxybutanamido)ceph-3-em-4-carboxylic acid, the step of reacting said carboxylic acid or a salt thereof selected from the group consisting of an alkali metal, tri(C_1–C_6) alkyl ammonium, piperidinium, N(C_1–C_6) alkyl piperidinium, N,N,N-dimethylphenylammonium, pyridinium, quinolinium and benzylammonium salt with an alcohol selected from the group consisting of a C_1–C_4 alkanol, an alkanolamine having 2–4 carbon atoms in the chain between the hydroxyl and amino groups, benzyl alcohol, cyclopentanol and cyclohexanol in the presence of an acid halide catalyst to selectively esterify said 7-side chain carboxyl group without esterifying the 4-carboxyl group.

4. A compound selected from the group consisting of a compound of the formula



where X is ROOC— in which R is selected from the group consisting of C_1–C_4 alkyl, benzyl, cyclopentyl, and cyclohexyl or



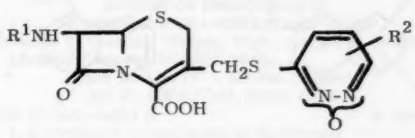
where Z is an alkylene group having 2–4 carbon atoms, and a salt thereof selected from the group consisting of an alkali metal, tri (C_1–C_6) alkylammonium, piperidinium, N(C_1–C_6) alkyl piperidinium, N,N,N-dimethylphenylammonium, pyridinium, quinolinium and benzylammonium salt.

3,892,737
CEPHALOSPORINS

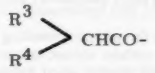
Michihiko Ochiai, Senriyamahigashi; Osami Aki, Kawanishi; Akira Morimoto, Yamadashimo, and Taiiti Okada, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed Aug. 18, 1972, Ser. No. 281,656
Claims priority, application Japan, Aug. 20, 1971, 46-63448; Oct. 25, 1971, 46-84522
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 39 Claims

1. A compound of the formula:



wherein R^1 represents hydrogen or:



wherein R^3 represents phenyl, phenoxy, 1-cyclohexenyl, thienyl, 3-amino-3-carboxypropyl, pyrazolyl, pyrazolyl substituted with chlorine or pyrazolyl substituted with methyl and R^4 represents hydrogen or amino and
wherein R^2 represents hydrogen, chlorine, bromine, methyl, ethyl, propyl or alkoxy having up to 8 carbon atoms,
or a pharmaceutically acceptable salt thereof.

3,892,738
7-THIASUBSTITUTED-1,2,4-BENZOTHIADIAZINE-1,1-DIOXIDES AND THEIR SALTS

Frederick C. Novello, Berwyn, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 20, 1972, Ser. No. 236,244
Int. Cl. C07d 93/32
U.S. Cl. 260—243 D 7 Claims

1. 3-R^1-6-X-7-RS-1,2,4-benzothiadiazine-1,1-dioxides and pharmacologically acceptable salts thereof wherein X represents C_{1-3} alkyl, chloro and trifluoromethyl; R^1 represents pyridyl and C_1–C_3-alkyl substituted pyridyl and R represents hydrogen, C_1–C_6 lower alkyl and phenyl-C_1–C_3-alkyl.

3,892,739
1,2-BENZOTHIAZINES

Maximilian Von Strandtmann, Rockaway; John Shavel, Jr., Mendham; Sylvester Klutchko, Hackettstown, and Marvin Cohen, New Milford, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 174,947, Aug. 25, 1971, Pat. No. 3,801,644. This application July 27, 1973, Ser. No. 383,416
Int. Cl. C07d 93/02
U.S. Cl. 260—243 R 1 Claim

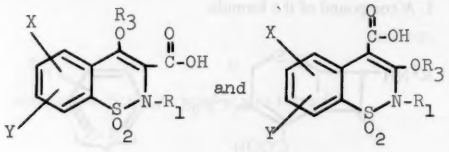
1. A compound which is 4-hydroxy-2-methyl-2H-1,2-benzothiazin-3-yl(methylsulfinyl) methyl ketone S,S-dioxide.

3,892,740
PROCESS FOR THE PRODUCTION OF CARBOXAMIDES OF OXO-1,2-BENZOTHIAZINE-1,1-DIOXIDES

Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Oct. 15, 1974, Ser. No. 514,570
Int. Cl. C07d 93/02
U.S. Cl. 260—243 R 12 Claims

1. A compound selected from the group consisting of those of the formulae



wherein X and Y are each selected from the group consisting of hydrogen, fluorine, chlorine, bromine, nitro, trifluoromethyl and alkyl and alkoxy having up to 5 carbom atoms;

R_1 is selected from the group consisting of hydrogen, alkyl having up to 6 carbon atoms, alkenyl having up to 4 carbon atoms and phenyl alkyl having up to 3 carbon atoms in the alkyl moiety;

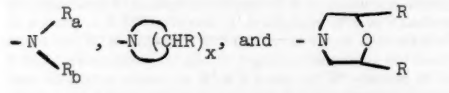
and R_3 is selected from the group consisting of lower alkyl, and phenylalkyl having up to 3 carbon atoms in the alkyl moiety.

3,892,741
PREPARATION OF THIOCARBAMYLSULFENAMIDES

Ray D. Taylor, Brecksville, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Filed May 18, 1972, Ser. No. 254,533
Int. Cl. C07d 87/46
U.S. Cl. 260—246 B 11 Claims

1. A process for the preparation of thiocarbamylsulfenamides comprising the reaction of, as the only reactants, (1) a monohaloamine(s) of the formula X—A wherein X is selected from the group consisting of —Cl, —Br, and —I, and A is selected from the group consisting of



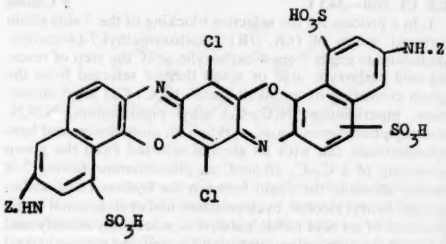
wherein R_a and R_b are selected from the group consisting of -H, alkyl having 1 to 24 carbon atoms, cyanoalkyl having 2 to 12 carbon atoms, alkoxyalkyl having 2 to 12 carbon atoms, cycloalkyl having 4 to 8 carbon atoms in the ring, phenyl, and aralkyl or alkaryl having up to 18 carbon atoms; and where $x = 4$ to 7, and R is selected from the group consisting of hydrogen and alkyl having 1 to 2 carbon atoms, and (2) a thiocarbonate salt of the formula M_zCS_y, wherein M is selected from the class consisting of alkali metals, alkaline earth metals, and an ammonium salt of the formula $—N(R')_4$ where R' is —H, alkyl having 1 to 8 carbon atoms, or mixtures thereof, $Z = 1$ to 2, and y is 3 or 4.

3,892,742
REACTIVE DYESTUFFS

Brian Parton, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 20, 1973, Ser. No. 389,546
Claims priority, application United Kingdom, Sept. 6, 1972, 41351/72
Int. Cl. C09b 19/02
U.S. Cl. 260—246 R 5 Claims

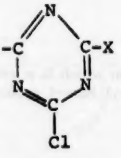
1. A dyestuff of the formula



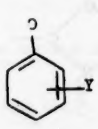
wherein Z is

1. 4,6-dichloropyrimid-2-yl,
2. 4,5,6-trichloropyrimid-2-yl,
3. 2,4-dichloropyrimid-5-yl carbonyl,
4. 4,6-dichloro-5-cyanopyrimid-2-yl,
5. 4,6-difluoro-5-chloropyrimid-2-yl,
6. 2,4-dichloroquinazolin-6-ylsulphonyl,
7. 2,4-dichloroquinazolin-6-yl carbonyl,
8. 2,3-dichloroquinoxalin-6-ylcarbonyl,
9. β-(4,5dichloropyridaz6-on-1-yl) propionyl,
10. 4,6-dibromopyrimid-2-yl,
11. 2-methylsulphonyl-5-chloro-6-methylpyrimid-4-yl,
12. 3,6-dichloropyridazin-4-ylcarbonyl,
13. 2,3-dichloroquinoxalin-6-ylsulphonyl,
14. 1,4-dichlorophthalazin-6-ylcarbonyl,
15. β-(2,2,3,3-tetrafluorocyclobutyl) acryloyl,
16. 2,2,3,3-tetrafluorocyclobutylcarbonyl,
17. 2,methylsulphonyl-6-methylpyrimid-4-yl and

(18)

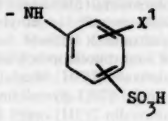


wherein X is selected from Cl; lower alkoxy:

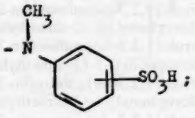


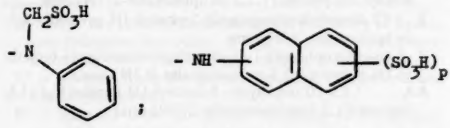
wherein Y is H, Cl or SO_3H;

lower alkoxy alkoxy; NH_2; lower alkylamino; di (lower alkyl) amino; lower hydroxyalkylamino; β-sulphatoethylamino; anilino;

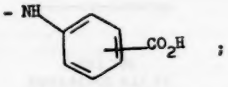


wherein X^1 is H, CO_2H, CH_3, OCH_3, Cl or SO_3H; cyclohexylamino;

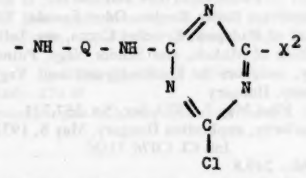




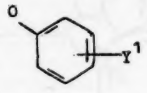
wherein $p = 1$, 2 or 3;



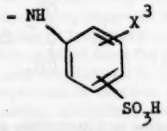
and



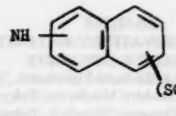
wherein Q is sulphophenylene, disulphophenylene, ethylene or 2-sulpho-1,3-trimethyline and X^2 is Cl; OCH_3;



wherein Y^1 is H or SO_3H; NH_2; lower allylamino; β-hydroxyethylamino; anilino;



wherein X^3 is H, CO_2H, CH_3, OCH_3, Cl or SO_3H; or



wherein $q = 2$ or 3.

3,892,743

AMIDES OF DIBROMO-AND TRIBROMOMETHANESULFONIC ACIDS

Christian T. Goralski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 26, 1973, Ser. No. 326,609

Int. Cl. C07d *27/04, 29/34, 47/86*

U.S. Cl. 260—247.1 R **5 Claims**

1. A compound corresponding to the formula

$$Br_xH_{3-x}CSO_2NR_1R_2$$

wherein R_1 and R_2 together with the nitrogen atom form a heterocyclic ring of the group of a pyrrolidinyl, piperidinyl, morpholinyl, 4-methyl piperidinyl and 2,6-dimethyllmorpholinyl and x is 2 or 3.

3,892,744

PROCESS FOR PREPARING 4-[3-(SUBSTITUTED AMINO)-2-HYDROXYPROPOXY]-1,2,5-THIADIAZOLES

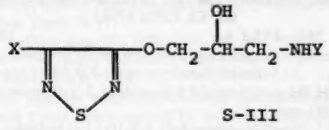
Leonard M. Weinstock, Belle Mead; Roger J. Tull, Metuchen, and Dennis M. Mulvey, Milford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 284,013, Aug. 25, 1972, abandoned, which is a division of Ser. No. 172,234, Aug. 16, 1971, Pat. No. 3,718,647, which is a division of Ser. No. 818,474, April 21, 1969, Pat. No. 3,657,237. This application Dec. 18, 1973, Ser. No. 425,912

Int. Cl.² C07D *295/12, 285/10*

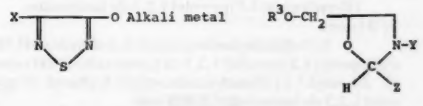
U.S. Cl. 260—247.1 H **6 Claims**

1. A process for the preparation of an optically active thiadiazole in the sinister configuration having the structure S-III,



S-III

comprising the reaction of a compound of structure I with a compound of structure S-II,



I S-II

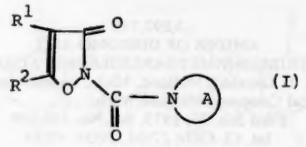
followed by acid hydrolysis wherein the variable radical X is selected from chloro, C_{1-3} alkyl, C_{1-3} alkoxy, phenyl, benzyl, morpholino, piperidino, hydroxypiperidino, and N-C_{1-3} alkyl-1-piperazinyl, Y is a straight or branched chain C_{1-5} alkyl; Z is hydrogen or an aliphatic, alicyclic, aromatic or heterocyclic residue of the aldehyde ZCHO used to form the oxazolidine nucleus; and R^3 is alkylsulfonyl, arylsulfonyl or aralkylsulfonyl.

3,892,745
ISOXAZOLONE DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Kazuo Tomita, Yokosuka; Tadashi Murakami, Tokyo; Hiromu Takagi, Tokyo, and Yasuhiro Morisawa, Tokyo, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Nov. 20, 1972, Ser. No. 307,864
Int. Cl.[2] C07D *295/04*
U.S. Cl. 260—247.2 A **15 Claims**

1. A compound having the formula



(I)

wherein R^1 represents a hydrogen atom, an alkyl group of from 1 to 4 carbon atoms or a halogen atom; R^2 represents a hydrogen atom, an alkyl group of from 1 to 4 carbon atoms, or a phenyl group; and a group of the formula

represents a morpholyl group, a pyrrolidyl group, a piperidyl group, a C_1-C_4 alkyl-substituted piperidyl group, a hexamethyleneimino group, a 4-phenylpiperazyl group or a 4-(halophenyl) piperazyl group.

3,892,746
PYRROLO([1,2,3-de)]QUINOXALIN-2(3H)-ONES AND RELATED COMPOUNDS

John H. Sellstedt, King of Prussia, and Milton Wolf, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 831,723, June 9, 1969, abandoned. This application Jan. 27, 1972, Ser. No. 221,416
Int. Cl. C07d *87/42*
U.S. Cl. 260—247.2 A **28 Claims**

1. A compound selected from the group consisting of:

A. 3-(3-dimethylaminopropyl)-8,9,10,11-tetrahydro-1H,7H-cyclohepta[4,5]pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

B. 3-(2-dimethylaminoethyl)-8,9,10,11-tetrahydro-1H,7H-cyclohepta[4,5]pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

C. 6-methyl-1-(2-dimethylaminoethyl)-5-phenyl-1H-pyrrolo1,2,3-de]quinoxalin-2(3H)-one.

D. 1-(3-dimethylaminopropyl)-5-methyl-6-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

E. 3-(2-dimethylaminoethyl)-7,8,9,10,11,12-hexahydro-1H-cycloocta[4,5]pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

F. 3-(3-dimethylaminopropyl)-8,9-dihydro-1H,7H-cyclopenta[4,5]pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

G. 5-benzyl-1-(2-dimethylaminoethyl)-6-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

H. 1-(3-dimethylamino-2-methylpropyl)-6-ethyl-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2-(3H)-one.

I. 1-(3-dimethylamino-1-methylpropyl)-6-ethyl-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

J. 1-(2-dimethylaminoethyl)-6-ethyl-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

K. 1-(3-dimethylaminopropyl)-6-methyl-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

L. 1-(3-dimethylaminopropyl)-5-phenyl-6-propyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

M. 1-(3-dimethylaminopropyl)-6-ethyl-5-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

N. 6-ethyl-1-(2-morpholinoethyl)-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

O. 1-(2-diethylaminoethyl)-6-ethyl-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

P. 6-ethyl-1-(3-morpholinopropyl)-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

Q. 6-ethyl-5-phenyl-1-[2-(1-pyrrolidinyl)ethyl]-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

R. 6-ethyl-1-(3-methylaminopropyl)-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

S. 6-ethyl-5-phenyl-1-[3-(1-pyrrolidinyl)propyl]-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

T. 1-(3-dimethylaminopropyl)-5-(p-methoxyphenyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

U. 5-(p-benzyloxyphenyl)-1-(3-dimethylaminopropyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

V. 5-(m-chlorophenyl)-1-(3-dimethylaminopropyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

W. 5-(p-chlorophenyl)-1-(3-dimethylaminopropyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

X. 1-(3-dimethylaminopropyl)-5-(p-hydroxyphenyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

Y. 1-(3-dimethylaminopropyl)-5-phenyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

Z. 5-(o-chlorophenyl)-1-(3-dimethylaminopropyl)-6-methyl-1H-pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

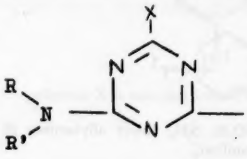
AA. 7,8,9,10-tetrahydro-8-methyl-1H-pyrido[3',4':4,5-]pyrrolo[1,2,3-de]quinoxalin-2(3H)-one.

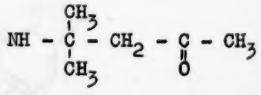
3,892,747
TRIAZINE COMPOUNDS AND HERBICIDES CONTAINING THE SAME, AND A PROCESS FOR THE PREPARATION THEREOF

Gyorgy Matolcsy; Barna Bordas; Odon Szatala; Viktor Andriska, all of Budapest; Erzsebet Grega, nee Toth; Zoltan Pinter, both of Miskolc, and Sandor Nagy, Putnok, all of Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary

Filed May 7, 1973, Ser. No. 357,721
Claims priority, application Hungary, May 8, 1972, 167
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.8 **1 Claim**

1. A 2-substituted-4-alkylamino-6-(α,α-dimethyl-β-acetylethylamino)-1,3,5-triazine of the formula





wherein

X represents chlorine or a methylthio group,

R represents hydrogen or a C_{1-4} alkyl group, and

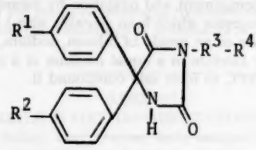
R' stands for a C_{1-4} alkyl or alkenyl group.

3,892,748
5,5-DIPHENYL-3-(PIPERIDINO, TETRAHYDROPYRIDYL-1-AND PIPERAZINO)-HYDANTOINS

Shin Hayao, Tokyo, Japan; Herbert John Havera, Edwardsburg, Mich., and Wallace Glenn Strycker, Goshen, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed July 20, 1973, Ser. No. 381,021
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PH **16 Claims**

1. A compound of the formula



or a pharmacologically acceptable acid addition salt thereof wherein:

R^1 and R^2 are selected from the group consisting of hydrogen, halogeno, loweralkyl of 1 to 3 carbon atoms, loweralkoxy of 1 to 3 carbon atoms, amino, and nitro;

R^3 is selected from the group consisting of ethylene and trimethylene; and

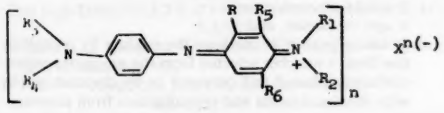
R^4 is selected from the group consisting of 4-phenyl-1-piperidyl, 4-hydroxy-4-phenyl-1-piperidyl, 4-phenyl-1,2,3,6-tetrahydropyridyl, and 4-phenyl-1-piperazinyl.

3,892,749
INDAMINE SALTS

Gregoire Kalopissis, Paris; Andrée Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 180,456, Sept. 14, 1971, Pat. No. 3,824,075. This application Apr. 3, 1974, Ser. No. 457,620
Claims priority, application France, Sept. 18, 1970, 70.34043
Int. Cl. C07c *119/06*
U.S. Cl. 260—270 H **2 Claims**

1. An indamine salt including tautomers thereof, having the formula:



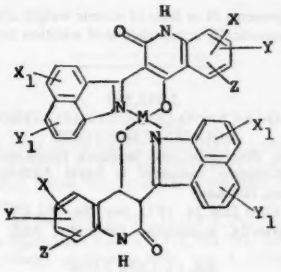
wherein R_1 and R_2 each independently represent lower alkyl; R_3 and R_4 each independently represent a member selected from the group consisting of lower alkyl and lower alkyl substituted with a member selected from the group consisting of piperidino, hydroxy and acetylamino; R_5 and R_6 each represent hydrogen; R represents a member selected from the group consisting of amino, acetylamino and hydroxy; n is an integer of 1 or 2; and $X^{n(-)}$ represents an anion selected from the group consisting of persulfate, perchlorate, chloride, bromide and Cl_3Zn^-.

3,892,750
AZOMETHINE PIGMENTS AND PROCESSES FOR THEIR MANUFACTURE

Christoph Frey, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 3, 1973, Ser. No. 385,618
Claims priority, application Switzerland, Aug. 9, 1972, 11763/72
Int. Cl. C07d *33/38*
U.S. Cl. 260—270 Q **7 Claims**

1. An azomethine pigment metal complex of the formula



wherein M is nickel, copper, cobalt, zinc, or cadmium; and X, Y, Z, X_1 and Y_1 is hydrogen, halogen or alkyl of 1 to 6 carbon atoms, with the proviso that x, y and z are not simultaneously tertiary alkyl.

3,892,751
ZETA FORM OF QUINACRIDONE

Ronald S. Tyson, Piscataway, and Leonard Shapiro, East Brunswick, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,986
Int. Cl. C07d *37/22, 37/18*
U.S. Cl. 260—279 R **1 Claim**

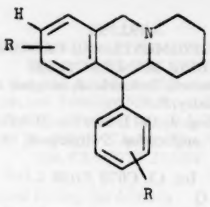
1. A red pigment consisting of linear quinacridone in the zeta crystal phase characterized by an X-ray diffraction pattern exhibiting six strong lines corresponding to interplanar spacings of 14.06A, 6.38A, 3.45A, 3.35A, 3.11A, and 2.11A and six weak lines with interplanar spacings of 7.05A, 4.35A, 3.91A, 3.59A, 3.18A, and 2.83A.

3,892,752
PHENYL AND SUBSTITUTEDPHENYL BENZOQUINOLIZINES

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz, Inc., East Hanover, N.J.

Division of Ser. No. 246,352, April 21, 1972, Pat. No. 3,824,244. This application Apr. 26, 1974, Ser. No. 464,696
Int. Cl. C07d *35/26, 35/22*
U.S. Cl. 260—283 R **2 Claims**

1. A compound of the formula



where R represents H or halo of atomic weight about 19–36, or a pharmaceutically acceptable acid addition salt thereof.

3,892,753

O-ALKYL-O-[3-CYANO-QUINOLYL-(2)]-THIONOPHOSPHONIC ACID ESTERS

Christa Fest, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

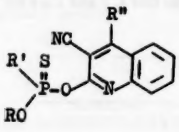
Filed July 24, 1973, Ser. No. 382,236

Claims priority, application Germany, Aug. 10, 1972, 2239366

Int. Cl. C07d *33/60*

U.S. Cl. 260—283 CN **5 Claims**

1. An 0-alkyl-0-[3-cyano-quinolyl-(2)]-thionophosphonic acid ester of the formula



(I)

in which

R is alkyl of 1 to 4 carbon atoms,

R′ is lower alkyl of 1 to 4 carbon atoms or phenyl, and

R″ is hydrogen or methyl.

3,892,754

5,6-BENZO-γ-PYRIDONE DERIVATIVES

Ekkehard Winterfeldt, Grossburgwedel, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

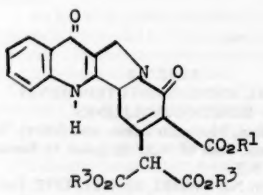
Filed Dec. 10, 1971, Ser. No. 206,922

Claims priority, application Germany, Nov. 13, 1971, 2156501; Dec. 12, 1970, 2061359

Int. Cl. C07d *39/00*

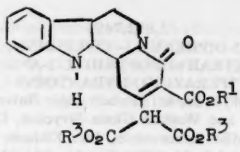
U.S. Cl. 260—287 R **1 Claim**

1. A process for the production of a 5,6-benzo-γ-pyridone having the formula:



(II)

in which R^1 denotes alkyl of from 1 to 3 carbons, and R^3 denotes t-butyl which comprises subjecting an indole of the formula:



(I)

in which R^1, and R^3 have the meanings expressed above, to a combined rearrangement and oxidation by means of oxygen and a proton acceptor which is an alkoxide with 1 to 6 carbon atoms, a hydride or an amide of lithium, sodium, potassium, magnesium, or calcium in a liquid medium at a temperature of from 0° to 50°C to form said compound II.

3,892,755

PROCESS OF PREPARATION OF VINCAMINE FROM TABERSONINE

Jean Levy, Reims, France, assignor to Omnium Chimique Societe Anonyme, Brussels, Belgium

Filed Jan. 13, 1972, Ser. No. 217,580

Claims priority, application Belgium, Mar. 3, 1971, 763730; Jan. 15, 1971, 761628

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 R **15 Claims**

1. The method for producing (−)-vincamine) which comprisces the sequential steps of:

a. catalytically hydrogenating (−)-tabersonine for a time at least sufficient for producing (−)-vincadifformine in the presence of a catalyst selected from the group consisting of PtO_2, Pt/C, and Pd/C;

b. oxidizing the vincadifformine of step (a) with a peracid selected from the group consisting of peracetic acid, perbenzoic acid, metachlororbenzoic acid, paranitroperbenzoic acid, performic acid, perphthalic acid, and mixtures thereof; under nitrogen, in darkness, and in the presence of a water-immiscible solvent selected from the group consisting of aromatic solvents, ether and aliphatic chlorinated hydrocarbons; for a time at least sufficient for producing (−)-1,2-dehydro-16-carbomethoxy-16-hydroxy-N-oxyaspidospermidine;

c. reducing the (−)-1,2-dehydro-16-carbomethoxy-16-hydroxy-N-oxyaspidospermidine of step (b) in the presence of acetic acid with triphenylphosphine for a time at least sufficient for forming a product comprising a mixture of:

1 (−)-vincamine,

2. epi-16-vincamine, and

3. apo-vincamine, and

d. isolating (−)-vincamine from the mixture by crystallization from a member selected from the group of acetone, methanol, ethanol and propanol or by chromatography with aluminum-oxide and crystallization from acetone.

3,892,756

NOVEL DIBENZOCYCLOHEPTENES

Lucien Nedelec, Le Raincy, and Daniel Frechet, Paris, both of France, assignors to Roussel Uclaf, Paris, France

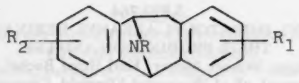
Filed Jan. 30, 1973, Ser. No. 328,006

Claims priority, application France, Feb. 4, 1972, 72.03778

Int. Cl. C07d *39/00*

U.S. Cl. 260—289 C **7 Claims**

1. A compound of the formula



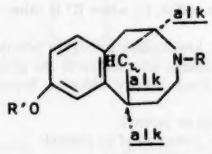
wherein R is selected from the group consisting of hydrogen, alkyl of one to six carbon atoms, monohydroxyalkyl of one to six carbon atoms, monohaloalkyl of one to six carbon atoms, lower alkenyl of two to six carbon atoms and lower alkynyl of two to six carbon atoms, and R_1 and R_2 are individually selected from the group consisting of hydrogen and halogen and the non-toxic, pharmaceutically acceptable acid addition salts thereof.

3,892,757
TRIALKYLMETHANOBENZAZOCINOLS

Stephen I. Sallay, Fort Wayne, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 29, 1973, Ser. No. 392,844
Int. Cl. C07d *39/00*
U.S. Cl. 260—293.54 **9 Claims**

1. A substituted benzazocine of the formula



wherein each alk is independently C_1–C_3 alkyl, R′ is H or alk and R is H, alk or

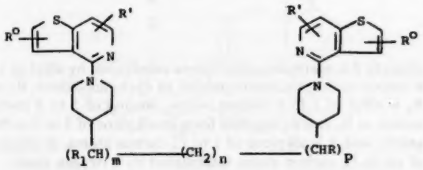
wherein R^2 is cyclopropyl or C_2–C_6 alkenyl and R^3 is hydrogen, methyl or ethyl, the sum of the carbon atoms in R^2 plus R^3 being less than 7; and pharmaceutically-acceptable acid addition salts thereof formed with non-toxic acids.

3,892,758
BIS[1-(4-THIENO[3,2-C]PYRIDINYL)-4-PIPERIDYL]ALKANES

William R. J. Simpson, Mendham, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Mar. 6, 1974, Ser. No. 448,525
Int. Cl. C07d *63/18*
U.S. Cl. 260—293.57 **7 Claims**

1. A compound of the formula:



wherein

R and R_1 are independently hydrogen or alkyl of 1 to 4 carbon atoms,

n is 1 to 6

m is 0 or 1

p is 0 or 1

each

R^o is independently hydrogen, halo of atomic weight of 18 to 80, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, and

each

R′ is hydrogen or alkyl of 1 to 4 carbon atoms, or

a pharmaceutically acceptable acid addition salt thereof.

3,892,759
METHOD FOR PREPARING AMINOALKANOL ESTERS OF 3-METHYLFLAVONE-8-CARBOXYLIC ACID

Enrico Sianesi, Milan, Italy, assignor to Recordati SA, Lugano, Switzerland

Division of Ser. No. 90,016, Nov. 16, 1970, Pat. No. 3,770,802.
This application Apr. 4, 1972, Ser. No. 241,094
Claims priority, application Italy, Aug. 1, 1970, 28190/70
Int. Cl. C07d *29/24*
U.S. Cl. 260—293.58 **4 Claims**

1. A method for preparing esters of 3-methylflavone-8-carboxylic acid with aminoalcohols, wherein 2-hydroxy-3-allylpropiophenone is subjected to an isomerisation treatment comprising dissolving it in a solvent and refluxing the solution under alkaline conditions to convert it to 2-hydroxy-3-propenylpropiophenone, the latter is oxidized with ozone at a temperature of about 0°C in a reaction medium which consists of a mixture of formic acid and acetic acid to produce 3-propionylsalicylic aldehyde, then the latter compound is subjected to an alkaline fusion to oxidize it to 3-propionylsalicylic acid, the latter is esterified with a lower alkanol, then the 3-propionylsalicylic acid lower alkyl ester is reacted with sodium benzoate and benzoyl chloride at a temperature of about 180°–190°C to produce a 3-methylflavone-8-carboxylic acid lower alkyl ester and the ester is transesterified with an aminoalcohol or, if desired, the lower alkyl ester is hydrolized to produce free 3-methylflavone-8-carboxylic acid and the said acid is esterified with an aminoalcohol, said aminoalcohol being selected from the group consisting of β-piperidinoethanol, β-morpholinoethanol, β-diethylaminoethanol, β-di-n-propylaminoethanol and β-di-isopropylaminoethanol.

3,892,760
BIS-(2-PYRIDYL-1-OXIDE) DISULFIDE

Haywood Hooks, Jr., West Haven, and James J. Pitts, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 2, 1974, Ser. No. 466,328
Int. Cl.² C07D *211/70*
U.S. Cl. 260—294.8 J **8 Claims**

1. In the method of preparing bis-(2-pyridyl-1-oxide) disulfide wherein 2-chloropyridine is oxidized with permaleic acid to form a reaction mixture containing 2-chloropyridine-1-oxide which is mercaptized using an alkali metal sulfide or alkali metal hydrosulfide to form the alkali metal salt of 2-mercaptopyridine-1-oxide in solution, the improvement comprising adjusting the pH of the resulting solution to a pH of about 4 to about 5 and then oxidizing with hydrogen peroxide to form the bis-(2-pyridyl-1-oxide) disulfide compound.

3,892,761

CERTAIN IMIDODITHIOCARBONATES

William Wayne Brand, Hopewell, and Michael Stanley Schrider, South Bound Brook, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 28, 1973, Ser. No. 410,842
Int. Cl.[2] C07D *31/50*; C07C *119/00*
U.S. Cl. 260—294.8 G 7 Claims

1. Dipropargyl (4-chloro-o-tolyl)dithioimido-carbonate.

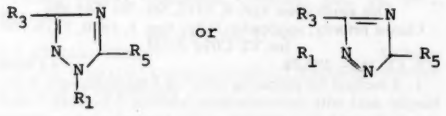
3,892,762

NOVEL SUBSTITUTED 1,2,4-TRIAZOLES

John J. Baldwin, Lansdale, and Frederick C. Novello, Berwyn, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 75,784, Sept. 25, 1970, abandoned. This application May 21, 1973, Ser. No. 361,915
Int. Cl.[2] C07D *213/75*
U.S. Cl. 260—295 E 9 Claims

1. A compound of the formula



wherein R_1 is lower alkanoyl, carbamoyl or di-loweralkylcarbamoyl and R_3 and R_5 are each pyridyl.

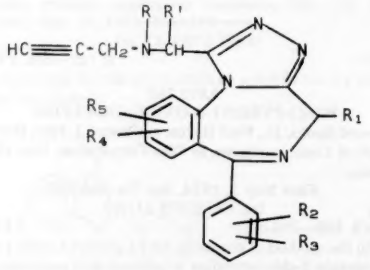
3,892,763

1-PROPYNYLAMINOMETHYL-6-PHENYL-4H-S-TRIAZOLO[4,3-A][1,4]BENZODIAZEPINES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 21, 1974, Ser. No. 453,194
Int. Cl. C07d *57/02*
U.S. Cl. 260—308 R 14 Claims

1. A compound of the formula II



wherein R, R′ and R_1 are hydrogen or alkyl of 1 to 3 carbon atoms, inclusive; wherein R_2, R_3, R_4 and R_5 are hydrogen, alkyl as defined above, fluorine, chlorine, bromine, nitro or trifluoromethyl; and the pharmacologically acceptable acid addition salts thereof.

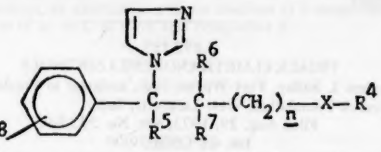
3,892,764

PHENYL-IMIDAZOLYL-ALKANYL DERIVATIVES, THEIR PRODUCTION AND USE

Carl Metzger; Werner Meiser; Karl Heinz Buchel, and Manfred Plempel, all of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer AG, Germany

Division of Ser. No. 172,201, Aug. 16, 1971, Pat. No. 3,796,704. This application Apr. 2, 1973, Ser. No. 346,939
Claims priority, application Germany, Aug. 22, 1970, 2041771The portion of the term of this patent subsequent to Mar. 12, 1991, has been disclaimed.
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 17 Claims

1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof, wherein

X is oxygen or sulfur, or when R^4 is other than hydrogen, sulfonyl;

R^4 is hydrogen, lower alkyl, phenyl or phenyl substituted by 1 to 3 substituents selected from the group consisting of lower alkyl, lower alkoxy, chlorine, bromine, fluorine or nitro;

R^5 is lower alkyl or phenyl;

R^6 is hydrogen, lower alkyl or phenyl;

R^7 is hydrogen or lower alkyl;

R^8 is hydrogen, lower alkyl, lower alkoxy, chlorine, fluorine, bromine or nitro; and

n is 0 or 1.

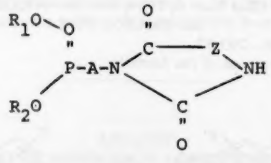
3,892,765

DIALKOXYPHOSPHONOALKYL DERIVATIVES OF CYCLIC UREIDES

Daniel Porret, Binninen, and Jurgen Habermeier, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 27, 1973, Ser. No. 419,313
Claims priority, application Switzerland, Dec. 12, 1972, 18030/72
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 6 Claims

1. A dialkoxyphosphonoalkyl derivative of the Formula I



wherein Z is methylene, methylene substituted by alkyl of 1 to 6 carbon atoms, cyclopentylidene, or cyclohexylidene, R_1 and R_2 is alkyl of 1 to 4 carbon atoms, alkenyl of 3 to 4 carbon atoms, or R_1 and R_2 together form an alkylene of 2 to 5 carbon atoms, and A is alkylene of 1 to 12 carbon atoms, or alkylene of up to 12 carbon atoms interrupted by 1 oxygen atom.

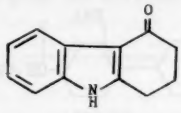
3,892,766

PROCESS FOR THE PREPARATION OF 4-KETO-1,2,3,4-ETRAHYDROCARBAZOLE

Harold Zinnes, Rockaway, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

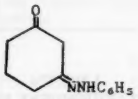
Filed June 3, 1974, Ser. No. 475,476
Int. Cl. C07d 27/68
U.S. Cl. 260—315 1 Claim

1. In an improved process for the production of a compound of the formula



II

the improvement comprises refluxing a compound of the formula



I

with trifluoroacetic acid, and diluting the reaction mixture with ice water to obtain Compound II as a precipitate.

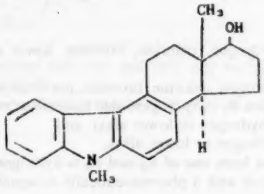
3,892,767

INDOLOSTEROIDS (6,12A-DIMETHYLINDENO-(4,5C)-CARBAZOLES) AND PROCESS THEREFOR

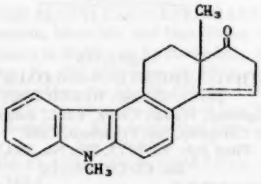
Jagadish C. Sircar, Dover, and Harold Zinnes, Rockaway, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed June 3, 1974, Ser. No. 475,559
Int. Cl. C07d 27/68
U.S. Cl. 260—315 6 Claims

1. A member selected from the group consisting of compounds of the formula:



I



II

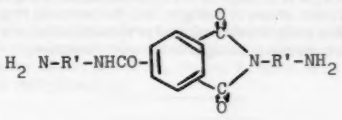
3,892,768

AMIDE-IMIDE POLYMERS

William M. Alvino, Pittsburgh, and Lawrence W. Frost, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1971, Ser. No. 180,190
Int. Cl. C07d 27/52
U.S. Cl. 260—326 C 5 Claims

1. A primary diamine having the general structural formula:



wherein R' is selected from the group consisting of divalent radicals of benzene, naphthalene, biphenyl, benzophenone, diphenyl ether, diphenyl sulfone, benzanilide, phenylbenzoate, diphenyl methane and diphenyl propane.

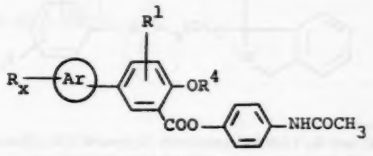
3,892,769

ACETAMINOPHEN ESTERS OF ARYL SALICYLIC ACIDS

Tsung-Ying Shen, Westfield; Howard Jones, Holmdel, and Dennis M. Mulvey, Milford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 20, 1973, Ser. No. 381,123
Int. Cl.[2] C07D 27/00, 27/56
U.S. Cl. 260—326.13 R 5 Claims

1. A compound of structural formula:



wherein
Ar is phenyl or pyrrolyl;
R^1 is hydrogen or C_{1-5} alkyl;
R is chloro or fluoro;
X is an integer from 0–5; and
R^4 is hydrogen, benzyl, or C_{2-3} alkanoyl.

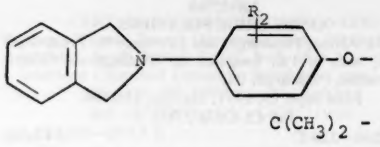
3,892,770

PHENOXYACETIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Johann Dahm; Joachim Borck; Herbert Nowak; Zdenek Simane, and Detlev Kayser, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Division of Ser. No. 234,343, March 13, 1972, Pat. No. 3,804,839. This application Sept. 4, 1973, Ser. No. 393,935
Int. Cl. C07d 27/48
U.S. Cl. 260—326.1 8 Claims

1. A compound of the formula



wherein R_1 is H or alkyl or 1-10 carbon atoms; R_2 is H, alkyl of 1–4 carbon atoms or halogen; and the aromatic ring of the isoindolino group is unsubstituted or substituted by one or two of methyl, methoxy, halogen or by methylenedioxy.

3,892,771

SUBSTITUTED DIHYDROISOINDOLES

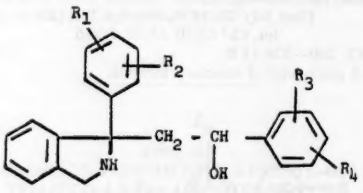
Marcel K. Eberle, Madison, N.J., assignor to Sandoz, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 323,629, Jan. 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 301,660, Oct. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 240,277, March 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 220,494, Jan. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 170,332, Aug. 9, 1971, abandoned. This application July 9, 1973, Ser. No. 377,642

Int. Cl. C07d *27/00, 27/48*

U.S. Cl. 260—326.1 **35 Claims**

1. A compound of the formula:



where

R_1 and R_2 each independently represent hydrogen or halo having an atomic weight of 19 to 36 and

R_3 and R_4 each independently represents hydrogen, lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, halo having an atomic weight of 19 to 36 or trifluoromethyl

provided that when both R_3 and R_4 are trifluoromethyl, they are not on adjacent carbon atoms; or a pharmaceutically acceptable acid addition salt thereof.

3,892,772

ISOMER OF 1-(P-CHLOROPHENYL)-1,2-CYCLOPROPANEDICARBOXIMIDE AND METHOD OF USE

Corris Mabelle Hofmann, Ho-Ho-Kus, N.J.; Arnold Curtis Osterberg, Pearl River; Eugene Newton Greenblatt, Spring Valley, both of N.Y., and David Henry Tedeschi, Little Falls, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 4, 1973, Ser. No. 421,559

Int. Cl. C07d *27/30*

U.S. Cl. 260—326.5 B **3 Claims**

1. The compound (1 S, 2 R)— (−) 1-(p-chlorophenyl)-1,2-cyclopropanedicarboximide, having a melting point of about 172°–173°C.

3,892,773

2-PHENYL ETHANOL DERIVATIVES

Andre Allais, Les Lilas; Jean Meier, La Varenne Saint-Hilaire, and Jacques Dube, Eaubonne, all of France, assignors to Roussel Uclaf, Paris, France

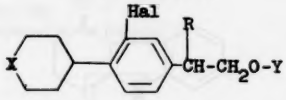
Filed May 21, 1973, Ser. No. 362,172

Claims priority, application France, June 1, 1972, 72.19690

Int. Cl. C07d *65/04, 7/04*

U.S. Cl. 260—327 TH **6 Claims**

1. A compound of the formula



wherein X is selected from the group consisting of oxygen and sulfur, Hal is halogen, R is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms and Y is selected from the group consisting of hydrogen and acyl of a lower alkanoic acid and when R is alkyl, they exist in the form of racemates or optically active isomers.

3,892,774

CYCLO PENTATHIOPHENE DERIVATIVES

Anton Ebnöther, Arlesheim; Fulvio Gadient, Birsfelden, and Rudolf Süess, Bettingen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

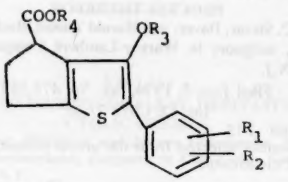
Filed Sept. 6, 1974, Ser. No. 503,968

Claims priority, application Switzerland, Sept. 11, 1973, 13024/73

Int. Cl. C07d *63/00*

U.S. Cl. 260—332.2 A **23 Claims**

1. A compound of formula I,



I

wherein

R_1 is hydrogen, chlorine, bromine, lower alkyl or lower alkoxy,

R_2 is hydrogen, chlorine, bromine, lower alkyl, lower alkoxy or, when R_1 is hydrogen, also fluorine or trifluoromethyl,

R_3 is hydrogen or lower alkyl, and

R_4 is hydrogen or lower alkyl,

or, when at least one of R_3 and R_4 is hydrogen, alternatively a salt thereof with a pharmaceutically acceptable cation.

3,892,775

3,5-DIMETHYL-2-THIENYL-(N-HALOALKYLTHIOCARBOXANILIDE) HERBICIDES

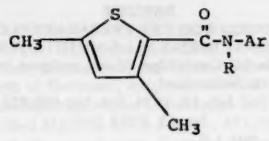
John W. Kobzina, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed July 30, 1973, Ser. No. 383,751

Int. Cl. C07d *63/16*

U.S. Cl. 260—332.2 C **3 Claims**

1. A compound of the formula



wherein R is haloalkylthio of 1 to 2 carbon atoms and of 3 to 5 chloro or bromo groups, and Ar is phenyl or 2-fluorophenyl.

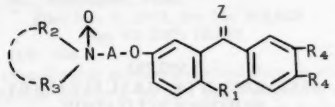
3,892,776

N-OXIDES OF BIS-BASIC TRICYCLIC ETHERS

Robert H. Hook, and George J. Wright, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Mar. 8, 1974, Ser. No. 449,227
Int. Cl. C07d 7/44
U.S. Cl. 260—335 8 Claims

1. An essentially pure N-oxide of a bis-basic tricyclic ether having the general formula



wherein

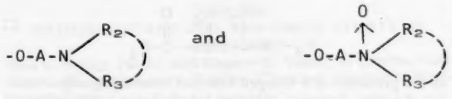
Z is oxygen or H_2;

R_1 is selected from the group consisting of a sigma bond, oxygen and when Z is oxygen the carbonyl radical;

A is the ethylene or trimethylene radical;

R_2 and R_3 are each selected from the group consisting of lower alkyl having from one to three carbon atoms and when taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, piperidino and morpholino radical;

R_4 is selected from the group consisting of hydrogen and the radicals



with the proviso that one and only one such R_4 group is hydrogen; and

the pharmaceutically acceptable acid addition salts thereof.

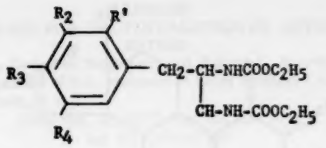
3,892,777

SUBSTITUTED BENZYLETHYLENEDICARBAMATES

Vsevolod Gruenman, Montclair, and Max Hoffer, Nutley, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 184,950, Sept. 29, 1974, abandoned, which is a division of Ser. No. 13,769, Feb. 24, 1970, Pat. No. 3,636,039, which is a continuation-in-part of Ser. No. 725,946, May 1, 1968, abandoned. This application Feb. 7, 1974, Ser. No. 440,640
Int. Cl. C07c 125/06; C07d 13/10
U.S. Cl. 260—340.5 1 Claim

1. A compound of the formula



where R' is hydrogen, lower alkyl and lower alkoxy: R_2, R_3 and R_4 taken independently of each other are hydrogen, hydroxy and lower alkoxy and R', R_2, R_3 and R_4 taken as an adjacent pair is methylenedioxy.

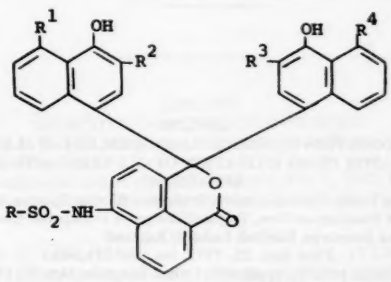
3,892,778

NAPHTHOL SULFONAMIDONAPHTHALIDES

Myron S. Simon, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 193,746, Oct. 29, 1971, Pat. No. 3,811,881. This application Mar. 14, 1974, Ser. No. 451,077
Int. Cl. C07d 7/20
U.S. Cl. 260—343.2 R 7 Claims

1. A compound of the formula:



wherein R^1, R^2, R^3 and R^4 each are selected from hydrogen and a hydrogen-bonding group forming a 5-, 6- or 7-membered intramolecular hydrogen-bonded ring with the adjacent —OH and being a member selected from hydroxy, carboxy, o-hydroxyphenyl, sulfonamido, sulfamoyl and bis trifluoromethyl carbinol, at least one of R^1 and R^2 and at least one of R^3 and R^4 being hydrogen, and R is a hydrocarbon group containing up to 20 carbon atoms selected from alkyl, phenyl, phenyl-substituted alkyl and alkyl-substituted phenyl.

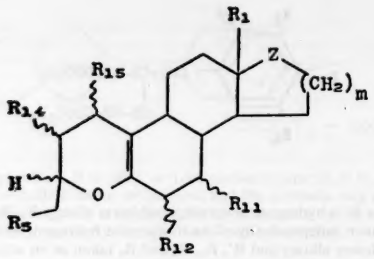
3,892,779

STEROIDAL INTERMEDIATES

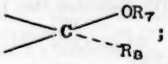
Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 57,372, July 22, 1970, Pat. No. 3,816,458, which is a continuation-in-part of Ser. No. 679,989, Nov. 2, 1967, Pat. No. 3,544,598, which is a continuation-in-part of Ser. No. 623,730, April 26, 1967, abandoned, which is a continuation-in-part of Ser. No. 604,124, Dec. 23, 1966, abandoned, which is a continuation-in-part of Ser. No. 549,816, May 13, 1966, abandoned, and a continuation-in-part of Ser. No. 813,693, April 4, 1969, abandoned. This application Mar. 13, 1974, Ser. No. 450,692
Int. Cl. C07d 7/20
U.S. Cl. 260—345.2 3 Claims

1. A compound of the formula



where R_1 is a primary lower alkyl group of from 1 to 5 carbon atoms; R_5, R_{11}, R_{12} and R_{15} are each independently hydrogen or lower alkyl; *m* is an integer having a value of from 1 to 2; and Z is carbonyl or a group of the formula



R_7 is hydrogen or lower alkanoyl; and R_8 is hydrogen or lower alkyl, lower alkenyl or lower alkynyl.

3,892,780

PRODUCTION OF MALEIC ANHYDRIDE BY CATALYTIC VAPOR PHASE OXIDATION OF GLUTARIC ACID OR ANHYDRIDE

Alan Lewis Crowther, and Christopher Buxton Spencer, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 25, 1972, Ser. No. 291,543

Claims priority, application United Kingdom, Oct. 20, 1971, 48713/71

Int. Cl. C07c *57/14*

U.S. Cl. 260—346.8 **9 Claims**

1. A process for the production of maleic anhydride which comprises contacting a mixture of a feedstock comprising glutaric acid and/or glutaric anhydride and a gas-containing free oxygen in the vapour phase at elevated temperature with a solid vanadium oxide catalyst.

3,892,781

METHOD FOR OXIDIZING O-XYLENE TO PHTHALIC ANHYDRIDE

Stewart R. Montgomery, Ashton, and Thomas H. Cheavens, Glenwood, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Aug. 2, 1973, Ser. No. 384,864

Int. Cl.[2] C07D *307/89*

U.S. Cl. 260—346.4 **3 Claims**

1. A process for improving the yield of phthalic anhydride recovered from the oxidation of o-xylene comprising carrying out the reaction at a temperature of from 600° to 750°F. and a pressure of from 1 to 75 p.s.i.g. in the presence of a V_2O_5/TiO_2 catalyst in a fluidized bed reactor system wherein the reactants are passed through two or more separate fluidized bed catalytic reactors in sequence.

3,892,782

PROCESS FOR THE PREPARATION OF 2-(HEX-3-CIS-EN-1-YL)-5-METHYL-FURAN

George H. Buchi, Cambridge, Mass., assignor to Firmenich S.A., Geneva, Switzerland

Filed July 12, 1974, Ser. No. 488,073

Int. Cl. C07d *5/16*

U.S. Cl. 260—346.1 R **4 Claims**

1. A process for the preparation of 2-[hex-3-cis-en-1-yl]-5-methyl-furan, which comprises:

a. reacting 5-methyl-furfural with a propargyl-magnesium halide;

b. hydrolysing the thus obtained compound to give 2-[1-hydroxy-but-3-yn-1-yl]-5methyl-furan;

c. converting the said hydroxy derivative into a corresponding ether;

d. reacting the resulting ether with an alkali metal in the presence of liquid ammonia and then adding ethyl bromide to the thus formed compound to give 2-[hex-3-yn-1-yl]-5-methyl-furan; and

e. partially reducing the triple bond of the resulting acetylenic derivative by catalytic hydrogenation to give 2-[hex-3-cis-en-1-yl]-5-methyl-furan.

3,892,783

PREPARATION OF ALKYL FURANS BY DEHYDROCYCLIZATION

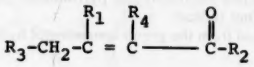
Roy B. Duke, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Mar. 5, 1971, Ser. No. 121,579

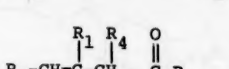
Int. Cl. C07d *5/16*

U.S. Cl. 260—346.1 R **23 Claims**

1. A process for the preparation of alkyl furans comprising oxidatively dehydrogenating and dehydrocyclizing a hydrocarbon starting compound having the structure:

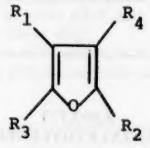


I



II

in the presence of a halogen selected from the group consisting of iodine, bromine, chlorine, interhalogen compounds and hydrohalic acids and molecular oxygen to form alkyl furans having the structure:



wherein said reaction is conducted in the vapor phase at at temperature of from about 300° to about 1300°F. and in the presence of a catalyst comprising copper chromite with or without other metallic salts, hydroxides, or oxides, or mixtures of elements from Groups Ia, IIa, Ib, VIb and VIII or the Lanthanide Series of the Periodic Table of the Elements at a gaseous hourly space velocity of from about 5 to about 1500 hours^{-1} and wherein R_1, R_2, R_3 and R_4 can be the same or different lower alkyl groups or hydrogen.

3,892,784

MANUFACTURE OF ALPHA-METHYL ETHERS OF ANTHRAQUINONE

Wolfgang Elser, Frankenthal, and Helmut Schmidt, Ludwigshafen, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Mar. 18, 1974, Ser. No. 451,785

Claims priority, application Germany, Mar. 24, 1973, 2314696

Int. Cl. C07c *49/68*

U.S. Cl. 260—383 8 Claims

1. A process for the manufacture of α-methyl ethers of anthraquinone, wherein an α-nitroanthraquinone is reacted with methanol in the presence of at least the stoichiometric amount of anhydrous or virtually anhydrous potassium carbonate.

3,892,785

CROSS-LINKABLE POLYAMIDES DERIVED FROM POLYMERIC FAT ACIDS

James E. Billigmeier, Rancho Cordova, Calif.; Allan L. Melby, Anoka; Dwight E. Peerman, Minneapolis, and Richard R. Roesler, New Brighton, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Nov. 9, 1972, Ser. No. 305,020

Int. Cl. C07c *103/30*

U.S. Cl. 260—404.5 17 Claims

1. A cross-linkable polyamide derived from an essentially linear diamine-polymeric fat acid based polyamide wherein the polymeric fat acid comprises at least about 25 equivalent % of the total carboxyl groups of the acid component used in the preparation of the polyamide and contains at least about 85% dimeric fat acid obtained by polymerizing ethylenically unsaturated aliphatic monocarboxylic acids of 16 to 22 carbon atoms, said cross-linkable polyamide having sufficient $-CH_2-O-R''$ groups, wherein R'' is a hydrocarbon radical of less than about 12 carbon atoms which may contain inert substituents, as replacements for amide hydrogens of the essentially linear polyamide to render the same cross-linkable.

3,892,786

BROMOACETANILIDES AND THEIR UTILITY AS BIOCIDES

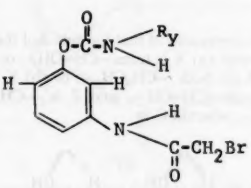
Don R. Baker, Pinole, and Eugene G. Teach, El Cerrito, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 806,717, March 12, 1969, abandoned. This application Mar. 24, 1971, Ser. No. 127,773

Int. Cl. C07c *125/06*

U.S. Cl. 260—468 E 5 Claims

1. A compound of the formula



wherein R_y is selected from the group consisting of alkyl containing from 1 to about 6 carbon atoms, inclusive, allyl and cyclohexyl.

3,892,787

PROCESS FOR THE PREPARATION OF METHYL ESTERS

Eddie N. Gutierrez, Fort Lee, and Robert C. Reardon, Jr., Tenafly, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,770

Int. Cl. C07c *67/00*

U.S. Cl. 260—410.9 R 6 Claims

1. A process for the preparation of methyl esters of aliphatic primary alcohols which comprises treating mono and polyhydric aliphatic primary alcohols with chlorine in methanol wherein said primary alcohols are selected from compounds of the formula:

$$R_1OH \text{ and } HO-R_2-OH$$

wherein R_1 is a straight or branched chain alkyl group of from 2 to 20 carbon atoms, and phenylalkyl wherein the alkyl moiety is from 1 to 20 carbon atoms, and R_2 is an alkylene group of from 3 to 20 carbon atoms; R_1 may also have halogen substituted thereon said halogen being selected from the group consisting of chlorine, bromine, and iodine; said treatment is conducted at a temperature of from about 0°C to about 80°C wherein the ratio of methanol to aliphatic primary alcohol is from about 5:1 to about 20:1 and the ratio of chlorine to methanol is from about 0.1:1 to about 10:1.

3,892,788

SELECTIVE CARBOXYLATION PROCESS

John F. Knifton, Poughquag, N.Y., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 223,015, Feb. 2, 1972, Pat. No. 3,819,669. This application Jan. 28, 1974, Ser. No. 437,251

Int. Cl. C07c *51/14*, *67/00*

U.S. Cl. 260—410.9 R 11 Claims

1. A process for selectively carboxylating alpha (α) olefins contained in mixtures of alpha-olefins and internal olefins to linear alkanoic acid or ester products, wherein said alpha olefins in the mixture constitute from 10 to 90 mole percent of the olefin mixture, said olefins containing from 2 to 30 carbon atoms, by:

a. contacting each mole of said olefin mixture with carbon monoxide and hydroxyl containing coreactant selected from the group consisting of water and alcohols, in the presence of from about 0.001 to 0.02 mole of a three component catalyst consisting of ligand-stabilized platinum (II) dihalide complexes in combination with Group IVB metal halides, said catalyst being selected from the group consisting of:

$PtCl_2[As(C_6H_5)_3]_2\text{-}SnCl_2$
$PtCl_2[As(C_6H_5)_3]_2\text{-}SnCl_4$
$PtCl_2[P(p\text{-}CH_3\text{-}C_6H_4)_3]_2\text{-}SnCl_2$
$PtCl_2[S(C_6H_5)_2]_2\text{-}SnCl_2$

with sufficient inert solvent to disperse the components of the admixture, to form a deoxygenated reaction mixture,

b. pressurizing said reaction mixture to between about 1500 psig to 3000 psig with at least sufficient carbon monoxide and hydroxyl containing coreactant to satisfy the stoichiometry of the carboxylation reaction,

c. heating said pressurized reaction admixture between 60° to 90°C, until between about 10 and 90 percent of said alpha olefins contained in said olefin mixture is converted to alkanoic acid or ester products, and then

d. isolating said alkanoic acid or ester products contained therein.

3,892,789
PROCESS FOR THE EXTRACTION OF GLYCERIDE OILS BY SELECTIVE SOLVENTS

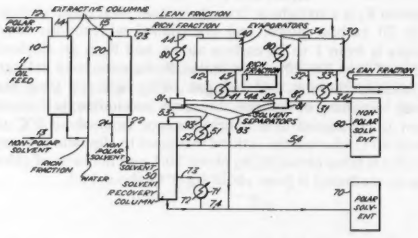
Anthony Mesnard Parsons, Hatfield, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Oct. 15, 1973, Ser. No. 406,748

Claims priority, application United Kingdom, Oct. 18, 1972, 48039/72

Int. Cl. C11b 7/00

U.S. Cl. 260—428.5 **11 Claims**



1. Process for increasing the combined polyunsaturated fatty acid content of edible oils having a combined linoleic acid content of at least 50% by weight, comprising contacting the oil with a suitable solvent system comprising an N-substituted amide solvent selected from the group consisting of dimethyl formamide, N-lower alkyl pyrrolidone, and 1,6-bis-pyrrolidon-2-yl-,-hexane at a temperature at which two liquid phases are formed, one consisting of a fraction of the oil rich in combined linoleic acid which is dissolved in the polar solvent, and the other a lean fraction comprising the residual oil, separating the two fractions and removing the polar solvent from the rich fraction to recover an oil fraction rich in combined linoleic acid.

3,892,790
COMPOSITIONS CONTAINING PLATINUM

Martin Leslie Tobe, Northwood; Abdul Rauf Khokhar, London, and Peter David Michael Braddock, Wigan, all of England, assignors to Rustenburg Platinum Mines Limited, Johannesburg, South Africa

Filed Apr. 9, 1973, Ser. No. 349,186

Claims priority, application United Kingdom, Apr. 10, 1972, 16349/72; Apr. 27, 1972, 19656/72; May 8, 1972, 21388/72; June 26, 1972, 29920/72; Sept. 8, 1972, 41798/72

Int. Cl.[2] C07E 15/00; C07F 87/34

U.S. Cl. 260—429 R **14 Claims**

1. A cis co-ordination compound of platinum having the structure

in which X and Y are halogen groups which are the same or different and A and B are the same or different alicyclic amine groups co-ordinated to the Pt through their N atoms each having the general formula:

$$\text{cyclo—}C_nR_{2n-1}NH_2$$

in which n may vary from 3 to 7 and in which all of the R groups are either the same or different and are selected from the group consisting of hydrogen and methyl and ethyl.

3,892,791
TITANIUM COMPOUNDS

David Whiteley Brook, Teesside, and Peter Dunlop Kay, Hartlepool, both of England, assignors to British Titan Limited, Teesside, England

Filed Sept. 25, 1972, Ser. No. 291,668

Claims priority, application United Kingdom, Oct. 28, 1971, 50038/71

Int. Cl. C07f 7/28

U.S. Cl. 260—429.5 **6 Claims**

1. A titanium chelate comprising the reaction product of a titanium orthoester having the formula $Ti(OR)_4$ in which R represents an alkyl group containing from 2 to 10 carbon atoms, an alkylene glycol containing 2 OH groups in which each alkylene group contains up to 6 carbon atoms, and an alkanolamine selected from the group consisting of diethanolamine, triethanolamine, diisopropanolamine and triisopropanolamine and in which the ratio of the number of moles of said glycol plus said alkanolamine to the number of moles of Ti in said chelate is from 4:1 to 1:1, and the ratio of the number of moles of said alkanolamine to the number of moles of said glycol is from 1:5 to 10:1.

3,892,792
PROCESS FOR THE SYNTHESIS OF PGE COMPOUNDS FROM PGF COMPOUNDS

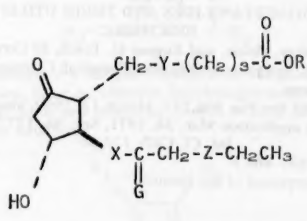
Ernest W. Yankee, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 207,630, Dec. 13, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 427,837

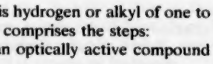
Int. Cl. C07c 51/00

U.S. Cl. 260—448.8 R **10 Claims**

1. A process for producing an optically active compound of the formula:

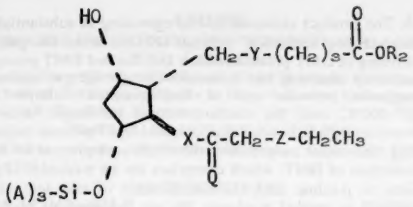


or a racemic compound of that formula and the mirror image thereof, wherein (a) X is trans—CH=OH— or $—CH_2CH_2—$, and Y and Z are both $—CH_2CH_2—$, or (b) X is trans—CH=CH—, Y is cis—CH=CH—, and Z is $—CH_2CH_2—$ or cis—CH=CH—; wherein G is

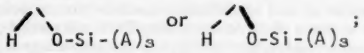


and wherein R_1 is hydrogen or alkyl of one to 8 carbon atoms inclusive, which comprises the steps:

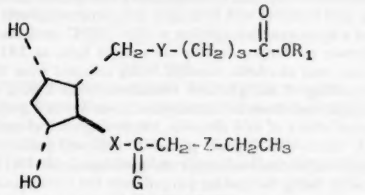
1. preparing an optically active compound of the formula:



or a racemic compound of that formula and the mirror image thereof, wherein A is alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one or 2 fluoro, chloro, or alkyl of one to 4 carbon atoms, inclusive, or aralkyl of 7 to 12 carbon atoms, inclusive; wherein Q is

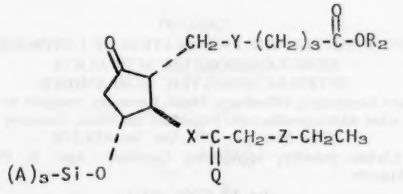


wherein R_2 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or —Si—$(A)_3$ wherein A is as defined above; and wherein X, Y, and Z are as defined above, by starting with an optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein G, R_1, X, Y, and Z are defined above, and reacting it either (a) with a silylating agent of the formula $(A)_3SiN(E)_2$ wherein A is alkyl of one to 4 carbon atoms, inclusive, phenyl, phenyl substituted with one or 2 fluro, chloro, or alkyl of one to 4 carbon atoms, inclusive, or aralkyl of 7 to 12 carbon atoms, inclusive, and E has the same defineition as A, being the same or different, at a temperature in the range of about −25° to −50° C., or (b) with a silylating agent consisting of a trisubstituted monochlorosilane selected from the group consisting of chlorotriethylsilane, chlorotriisobutylsilane, chlorotriphenylsilane, chlorotris(p-chlorophenyl)silane, chlorotrim-tolylsilane, and tribenzylchlorosilane in the presence of a tertiary base at a temperature in the range of about 0° to +25° C.;

2. forming an optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein A, Q, R_2, X, Y, and Z are as defined above, by oxidizing the reaction product of step (1) with a reagent which selectively oxidizes secondary hydroxyl to carbonyl in the presence of carbon-carbon double bonds; and

3. hydrolyzing the reaction product of step (2).

3,892,793

MANUFACTURE OF ISOCYANATES

Geoffrey Ernest Beswick, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

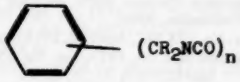
Filed Jan. 13, 1972, Ser. No. 217,623

Claims priority, application United Kingdom, Jan. 22, 1971, 2963/71

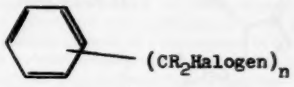
Int. Cl. C07c *119/04*

U.S. Cl. 260—453 P **4 Claims**

1. In a process for the manufacture of organic isocyanates of the formula



wherein R independently represents hydrogen or an alkyl group of from 1 to 4 carbon atoms, the benzene nucleus is substituted in at least one position ortho to each —CR_2NCO group by an alkyl group and *n* is from 2 to 4 which comprises reacting a halide of the formula



wherein R and n are as above defined, halogen represents a chlorine or bromine atom and the benzene nucleus is substituted in at least one position ortho to each —CR_2Halogen group by an alkyl group, with an alkali metal, ammonium or alkaline earth metal cyanate, the improvement which comprises first rendering the cyanate into a fine state of subdivision by milling in a solvent for the reaction in the presence of a finely divided inert substrate selected from the group of activated carbons and siliceous earths.

3,892,794

PROCESS FOR THE MANUFACTURE OF UNSATURATED ALDEHYDES, ACIDS AND NITRILES FROM THE CORRESPONDING OLEFINS

Robert K. Grasselli, Chagrin Falls; Dev. D. Suresh, Warrensville Heights, and Ernest C. Milberger, Solon, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Feb. 9, 1972, Ser. No. 224,967

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.3 **5 Claims**

1. A process for the ammoxidation of propylene or isobutylene to form acrylonitrile or methacrylonitrile, respectively, comprising contacting in the vapor phase at a temperature within the range of from about 250° to 600°C. a mixture of ammonia, a molecular oxygen-containing gas and either propylene, or isobutylene, or mixtures thereof, in a molar ratio of ammonia to olefin within the range from about 0.05:1 to about 5:1, and a molar ratio of oxygen to olefin within the range from about 0.5:1 to about 10:1, in the presence of a promoted, reduced, antimony oxide-molybdenum oxide-containing catalyst wherein the catalyst is prepared by combining the following components in any order:

a. an aqueous suspension of molybdenum oxide;

b. a reducing agent selected from the group consisting of finely divided metal, sulfur, sulfur dioxide, hydrogen sulfide, hydrazine hydrate, ammonia, hydroxylamine, and an organic reducing agent, each such reducing agent being capable of reducing at least some of the molybdenum to a valence state below +6, in a ratio of from about 0.0001 to 0.2 moles of the reducing agent per mole of the element molybdenum;

c. antimony oxide in a ratio of from about 0.1 to 9 moles of antimony oxide per mole of the element molybdenum; and

d. at least one promoter element in the form of a non-oxidizing compound, selected from the group consisting of tellurium, tungsten, titanium, manganese, nickel, iron, copper, lead, rhenium, bismuth, tin, uranium, chromium, phosphorus and boron, said promoter element being added in a ratio of from about 0.0001 to 1.0 moles of promoter element per mole of the element molybdenum.

3,892,795

16-METHYL AND 16,16 DIMETHYL PGA$_2$ COMPOUNDS

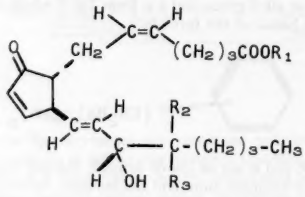
Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 133,342, April 12, 1971, abandoned. This application Apr. 23, 1973, Ser. No. 353,475

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D 9 Claims

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation, and wherein R_2 and R_3 are hydrogen, methyl, or ethyl, provided that at least one of R_2 and R_3 is not hydrogen.

3,892,796

HYDROGENATION OF DMT PROCESS RESIDUE AND DISTILLED DMT PROCESS RESIDUE

Raymond T. Leibfried, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 21, 1973, Ser. No. 372,371

Int. Cl. C07c *67/06, 51/36, 64/71*

U.S. Cl. 260—468 K 7 Claims

1. A process which comprises hydrogenating to substantially complete ring saturation material selected from the group consisting of DMT process residue and distilled DMT process residue by admixing said material with hydrogen at superatmospheric pressure and a hydrogenation catalyst at 100-300°C. until the reaction mixture no longer absorbs ultraviolet light at 241 millimicrons; said DMT process residue being the residue purged from the continuous process for the production of DMT, which comprises the air oxidation of p-xylene to p-toluic acid, the esterification of said acid with methanol to methyl p-toluate, the air oxidation of methyl p-toluate to the monomethyl ester of terephthalic acid, and the esterification of said monomethyl ester with methanol to DMT, said air oxidations being carried out together in a first stage to form an oxidate, said esterifications being performed together in a second stage to form an esterification reaction mixture, with said oxidate and methanol being introduced into said second stage, xylene and part of said esterification reaction mixture being introduced into said first stage, and the remainder of said esterification reaction mixture being distilled to give a distillate comprising DMT and methyl p-toluate, and a residue, part of which is introduced into said first stage and the remainder of which is purged.

5. The product obtained by hydrogenating to substantially complete ring saturation material selected from the group consisting of DMT process residue and distilled DMT process residue by admixing said material with hydrogen at superatmospheric pressure and a hydrogenation catalyst at 100°–300°C. until the reaction mixture no longer absorbs ultraviolet light at 241 millimicrons; said DMT process residue being the residue purged from the continuous process for the production of DMT, which comprises the air oxidation of p-xylene to p-toluic acid, the esterification of said acid with methanol to methyl p-toluate, the air oxidation of methyl p-toluate to the monomethyl ester of terephthalic acid, and the esterification of said monomethyl ester with methanol to DMT, said air oxidations being carried out together in a first stage to form an oxidate, said esterifications being performed together in a second stage to form an esterification reaction mixture, with said oxidate and methanol being introduced into said second stage, xylene and part of said esterification reaction mixture being introduced into said first stage, and the remainder of said esterification reaction mixture being distilled to give a distillate comprising DMT and methyl p-toluate, and a residue, part of which is introduced into said first stage and the remainder of which is purged.

7. The reaction product of alcoholic material and the product of the process which comprises hydrogenating to substantially complete ring saturation material selected from the group consisting of DMT process residue and distilled DMT process residue, said hydrogenating being effected by admixing said material with hydrogen at superatmospheric pressure and a hydrogenation catalyst at 100°–300°C. until the reaction mixture no longer absorbs ultraviolet light at 241 millimicrons; said alcoholic material being selected from the group consisting of straight and branched chain C_2-C_{18} alkanols, straight and branched chain C_1-C_{18} mono- and polyalkylene glycol ethers of said alkanols, ethylene glycol, propylene glycol, diethylene glycol, glycerol, sucrose, pentaerythritol, dipentaerythritol and neopentyl glycol and said DMT process residue being the residue purged from the continuous process for the production of DMT, which comprises the air oxidation of p-xylene to p-toluic acid, the esterification of said acid with methanol to methyl p-toluate, the air oxidation of methyl p-toluate to the monomethyl ester of terephthalic acid, and the esterification of said monomethyl ester with methanol to DMT, said air oxidations being carried out together in a first stage to form an oxidate, said esterifications being performed together in a second stage to form an esterification reaction mixture, with said oxidate and methanol being introduced into said second stage, xylene and part of said esterification reaction mixture being introduced into said first stage, and the remainder of said esterification reaction mixture being distilled to give a distillate comprising DMT and methyl p-toluate, and a residue, part of which is introduced into said first stage and the remainder of which is purged.

3,892,797

PROCESS FOR THE PREPARATION OF 1-NITROBENZENE-2-CARBOXYLIC ACID ALKYL ESTER-5-CARBOXYLIC ACID AMIDES

Kurt Gengnagel, Offenbach, Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 27, 1974, Ser. No. 455,375

Claims priority, application Germany, Apr. 3, 1973, 2316459

Int. Cl. C07c *103/24*

U.S. Cl. 260—471 R 1 Claim

1. A process for the preparation of a 1-nitrobenzene-2-carboxylic acid alkyl ester-5-carboxylic acid amide, wherein a 1-nitrobenzene-2,5-dicarboxylic acid dialkyl ester is reacted with ammonia in an alcoholic ammonia solution at about 20° to 30°C.

3,892,798
PROCESS FOR INTRODUCING TEREPHTHALIC ACID INTO A REACTION

Rudolf Heeg, Oberhochstadt, and Alfred Striebich, Bad Vilbel, both of Germany, assignors to Davy-Ashmore Aktiengesellschaft, Frankfurt, Germany

Filed Sept. 11, 1972, Ser. No. 287,985

Claims priority, application Germany, Sept. 14, 1971, 2145761

Int. Cl.[2] C07C *69/82*

U.S. Cl. 260—475 P **9 Claims**

1. In a process for introducing powdered terephthalic acid into a reaction mixture of terephthalic acid, partially esterified with ethylene glycol in a pressurized reaction vessel in an esterification reaction zone maintained at superatmospheric pressure wherein the ethylene glycol is introduced only directly into the reaction vessel, the improved process for adding the terephthalic acid to the reaction mixture which comprises removing a portion of the reaction mixture from the reaction zone, raising the pressure of the powdered terephthalic acid to substantially the pressure of the reaction zone; adding the pressurized powdered acid to the removed portion of the reaction mixture, without intermediate cooling of said removed portion of the reaction mixture or ethylene glycol addition thereto in a quantitative ratio of powdered acid to removed portion of the reaction mixture of about 1 to 33% by weight; homogenizing the resultant mixture in a homogenizer and returning the resultant homogenized mixture to the reaction mixture.

3,892,799
PHENOXYALKYLAMINES AND THEIR SALTS

Henri Pinhas, Paris, France, assignor to Laboratoires Laroche Navarron, Levallois, France

Filed Dec. 20, 1971, Ser. No. 210,108

Claims priority, application France, Dec. 28, 1970, 70.46876

Int. Cl.[2] C07C *93/06*

U.S. Cl. 260—501.18 **10 Claims**

1. A compound selected from the group consisting of 3-Methyl-4-[2-(α-methyl-phenethylamino)-ethoxy]-propiophenone and its non-toxic acid addition salts.

3,892,800
TRICHLOROAMINO (AND ACYLAMINO)PHENYLALKANOIC ACIDS AND ESTERS THEREOF

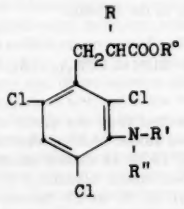
Ardie R. Nickel; Franklin J. Rosenberg, and James H. Ackerman, all of Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,531

Int. Cl. C07c *103/32*

U.S. Cl. 260—518 A **17 Claims**

1. A compound of the formula



wherein:

R, R° and R'' are hydrogen or alkyl of 1–4 carbon atoms; and R' is hydrogen or alkanoyl of 1–6 carbon atoms, R' being limited to alkanoyl when R'' is alkyl;

or therapeutically acceptable salts thereof where R° is hydrogen.

3,892,801
METHOD FOR PREPARING ALKALI SALTS OF P-METHYLAMINOBENZOYLGLUTAMIC ACID

John Kazan, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 11, 1974, Ser. No. 505,102

Int. Cl. C07c *103/30*

U.S. Cl. 260—518 R **8 Claims**

1. An improved method for preparing an alkali salt of p-methylaminobenzoylglutamic acid comprising (1) reacting and aqueous mixture of p-nitro, or p-chlorobenzoyl chloride and a salt of glutamic acid under alkaline conditions at a temperature of 20° to 40°C. to produce the corresponding alkali salt of p-chlorobenzoylglutamic acid, (2) acidifying the reaction mixture to precipitate p-nitro, or p-chlorobenzoylglutamic acid, (3) separating the latter compound by filtration, (4) reacting said p-nitro, or p-chlorobenzoylglutamic acid with an aqueous solution containing an excess of methylamine and cuprous chloride at a temperature of from 115°C. to 150°C. in a closed vessel to obtain a reaction mixture containing a salt of p-methylaminobenzoylglutamic acid, (5) treating said reaction mixture with an inorganic sulfide to precipitate the copper as copper sulfide, (6) separating said copper sulfide from the reaction mixture, (7) treating the reaction mixture with an alkalizing agent to form the alkali salt of p-methylaminobenzoylglutamic acid and (8) recovering said compound therefrom.

3,892,802
PROCESSES FOR MAKING BENZAMIDE COMPOUNDS

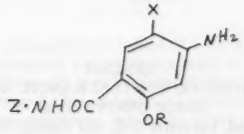
Ctirad Podesva, Montreal, Quebec; Geza Kohan, La Salle, Quebec, and William T. Scott, Ville-de-Lery, Quebec, all of Canada, assignors to Delmar Chemicals Limited, Ville La-Salle, Canada

Continuation-in-part of Ser. No. 4,587, Jan. 21, 1970, abandoned. This application Nov. 11, 1971, Ser. No. 197,986

Int. Cl. C07c *103/44*

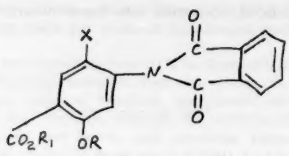
U.S. Cl. 260—559 S **18 Claims**

1. A process for making a benzamide compound having the formula:



(I)

wherein X represents a chlorine or bromine atom, R represents a hydrogen atom or an alkyl group and Z is a tertiary amino alkyl group, which comprises reacting a phthaloylamido compound having the formula:



(II)

wherein X and R each have the same meaning as in the foregoing formula I and R_1 is an alkyl group, with an asymetrically disubstituted diamine having the formula:

$$Z.NH_2$$

wherein Z has the same meaning as in the foregoing formula I, whereby dephthaloylation and aminolysis are accomplished in a single-stage, one-vessel reaction, said reaction being conducted in the presence of aluminum isopropoxide, which is an aminolysis catalyst, said reaction being conducted at a temperature between about 100° and 150°C., said reaction being conducted under substantially anhydrous conditions, and the molar ratio of said diamine to said phthaloylamido compound being at least six, the excess amount of said diamine being a solvent for said reaction.

3,892,803

NAPHTHYLALKANOIC ACIDS AND THEIR DERIVATIVES

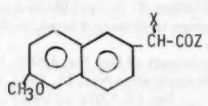
Julius Diamond, Lafayette Hill, and Ching Tan Tsuei, Lansdale, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 268,691, July 3, 1972, abandoned. This application Dec. 6, 1973, Ser. No. 422,479

Int. Cl. C07c *103/22*

U.S. Cl. 260—559 R **18 Claims**

1. A compound of the formula



where X is halo or hydroxy and Z is $—NH_2$, loweralkylamino, diloweralkylamino or cyclololoweralkylamino.

3,892,804

TETRAHYDRONAPHTHYLALKANOIC ACIDS AND THEIR DERIVATIVES

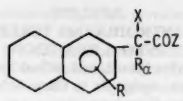
Julius Diamond, Lafayette Hill, and George Henry Douglas, Paoli, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 268,745, July 3, 1972, Pat. No. 3,829,467. This application Dec. 6, 1973, Ser. No. 422,491

Int. Cl. C07c *103/22*

U.S. Cl. 260—559 R **20 Claims**

1. A compound of the formula



where R is halo, R is hydrogen, X is hydroxy or halo and Z is amino, loweralkylamino, diloweralkylamino or cyclololoweralkylamino.

3,892,805

PRODUCTION OF AZINES

Kurt-Wilhelm Eichenhofer, Leverkusen, and Reinhard Schliebs, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 11, 1974, Ser. No. 441,548

Claims priority, application Germany, Feb. 24, 1973, 2309421; Oct. 2, 1973, 2349490

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 B **7 Claims**

1. A process for the production of an azine comprising reacting a carbonyl compound selected from the group consisting of formaldehyde, acetaldehyde, propionaldehyde, butyraldehyde, isobutyraldehyde, valeraldehyde, benzaldehyde, p-chlor-benzaldehyde, acetone, 2-butanone, 2-pentanone, diethylketone, pinacolone, acetylacetone, dibutylketone, cyclohexanone, methylphenylketone, methylisopropylketone, methylcyclohexylketone, dicyclohexylketone, 2-hexanone, 2-heptanone, cycloheptanone, and cyclopentanone, with ammonia and at least one peroxosulphuric acid compound selected from the group consisting of peroxomonosulphuric acid, peroxodisulphuric acid, and the ammonium, alkali metal and alkaline earth metal salts thereof.

3,892,806

REACTION PRODUCTS OF ε-CAPROLACTAM WITH ALKYLENE DIAMINES

Hans-Werner Eckert, Dusseldorf, and Gunter Koppensteiner, Hilden, both of Germany, assignors to Henkel & Cie, GmbH, Dusseldorf, Germany

Filed Apr. 20, 1973, Ser. No. 352,981

Int. Cl.² C07C *103/00*

U.S. Cl. 260—561 A **6 Claims**

1. A reaction product of ε-caprolactam with N-alkyl-1,3-propylene diamine of the formula:

$$RHN — (CH_2)_3—NH_2$$

wherein R is selected from the group consisting of alkyl of 10 to 18 carbon atoms, hydroxyalkyl of 10 to 18 carbon atoms, alkenyl of 10 to 18 carbon atoms, hydroxyalkenyl of 10 to 18 carbon atoms, alkadienyl of 10 to 18 carbon atoms, alkatrienyl of 10 to 18 carbon atoms, and mixtures of alkyl derived from fatty acid mixtures of 10 to 18 carbon atoms, with the molar ratio of N-alkyl-1,3-propylene diamine to ε-caprolactam ranging from 1:1 to 1:10; said reaction being carried out for 3 to 20 hours in the liquid phase at temperatures above 180°C.

3,892,807
AROMATIC AZOMETHINES

Wilfried Sahm, Kelkheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

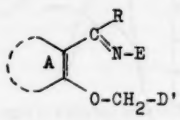
Filed Dec. 13, 1973, Ser. No. 427,016

Claims priority, application Switzerland, Dec. 18, 1972, 18397/72

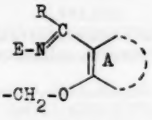
Int. Cl. C07c *119/00*

U.S. Cl. 260—566 F **5 Claims**

1. A compound of the formula



in which A is phenylene or naphthylene which is unsubstituted or substituted by halogen, lower alkyl, lower alkoxy, lower alkylene forming an annellated ring, or phenyl, R is hydrogen, lower alkyl or phenyl, E is lower alkyl which is linked to the azomethine nitrogen atom via a tertiary carbon atom, phenyl, chlorophenyl, lower alkyl phenyl, lower hydroxyalkyl phenyl or naphthyl and D′ is 4,4′-biphenylene which bivalent group is substituted by a group of the formula



in which A, R and E are as defined above.

3,892,808
HOP EXTRACTS

William Mitchell, Brookhaven, England, assignor to Carlton & United Breweries Limited, Carlton, Australia

Division of Ser. No. 129,608, March 30, 1971, abandoned, which is a continuation of Ser. No. 743,586, July 10, 1968, Pat. No. 3,607,300, which is a continuation-in-part of Ser. No. 594,980, Nov. 17, 1966, abandoned. This application June 28, 1972, Ser. No. 263,738

Claims priority, application United Kingdom, Nov. 17, 1965, 48866/65; Aug. 8, 1967, 36469/67; South Africa, Nov. 11, 1968, 66/6829; Canada, Nov. 13, 1967, 004813. The portion of the term of this patent subsequent to Sept. 21, 1988, has been disclaimed.

Int. Cl. C12c *9/02*

U.S. Cl. 260—586 D **9 Claims**

1. The method of preparing a water insoluble humulate hop which comprises contacting a solution of an extract of hops, the solvent of said solution being a water-immiscible solvent which dissolves alkali metal humulate salts less readily than does water, with a sufficient amount of a dilute aqueous alkali metal carbonate to form a mixture of said water-immiscible solvent solution and said dilute aqueous alkali metal carbonate having a pH sufficient to transfer the humulones into the aqueous phase as humulate salts but not sufficiently high to transfer the lupulones into the aqueous phase as lupulate salts, forming a water-immiscible phase containing the lupulate salts and a dilute aqueous phase containing the humulate salts, separating said dilute aqueous phase from said water-immiscible phase, adding to said dilute aqueous phase a water soluble salt of a cation whose humulate is water insoluble to form the water insoluble humulate and precipitating said water insoluble humulate salt, and separating the precipitated humulate salt from the dilute aqueous phase.

3,892,809
PROCESS FOR THE PREPARATION OF BUTENOYL 1,3-YCLOHEXADIENES

Karl-Heinrich Schulte-Elte, Onex, Geneva, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

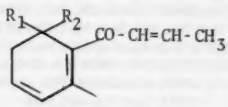
Filed Sept. 11, 1972, Ser. No. 287,647

Claims priority, application Switzerland, Sept. 13, 1971, 13397/71

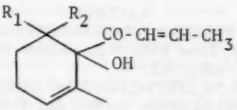
Int. Cl. C07c *45/00, 49/45*

U.S. Cl. 260—586 R **2 Claims**

1. A process for the preparation of unsaturated cycloaliphatic ketones of formula



wherein R_1 and R_2 are the same or different and each represents a hydrogen atom or a lower alkyl radical comprising from one to six carbon atoms, which comprises treating a keto-alcohol of formula



with an acid of the group comprising hydrochloric acid, sulphuric acid, phosphoric acid, p-toluenesulphonic acid, trifluoroacetic acid and acidic diatomaceous earth wherein the reaction is carried out in an inert organic solvent and at a temperature between about 50°C. and about the boiling temperature of the chosen solvent.

3,892,810
PREPARATION OF NITROCYCLOALKANONES

Mahmoud S. Kablaoui, Wappinger Falls, and Donald R. Lachowicz, Fishkill, both of N.Y., assignors to Texaco, Inc., New York, N.Y.

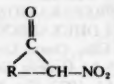
Continuation-in-part of Ser. No. 206,195, Dec. 8, 1971, abandoned. This application Nov. 29, 1973, Ser. No. 420,035

Int. Cl. C07c *45/04*

U.S. Cl. 260—586 P **26 Claims**

1. A method of preparing nitrocycloalkanones which comprises simultaneously contacting a solution containing a cycloalkene of the formula:

where R is a polymethylene radical of from three to 22 carbons or a substituted polymethylene radical of four to 22 carbons containing one or more substituents selected from the group consisting of alkyl and aryl, a 2-pyrrolidinone or alkyl substituted 2-pyrrolidinone denitrating agent and an aprotic organic solvent having a boiling point of between about 30° and 100°C. with dinitrogen tetroxide and oxygen at a temperature between about 0° to 40°C., where the mole ratio of said denitrating agent to said cycloalkene is about 0.5:1 to 1:1 ant the ratio of aprotic organic solvent to cycloalkene is from 2:1 to 20:1 parts by weight thereby forming a nitrocycloalkanone corresponding to the formula:



where R is as heretofore defined.

3,892,811

ORGANIC PEROXIDES AND METHOD THEREFOR

Yun Ger Chang, and Philip S. Bailey, both of Austin, Tex., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

Division of Ser. No. 310,560, Nov. 29, 1972, Pat. No. 3,842,129, which is a division of Ser. No. 170,621, Aug. 10, 1971, Pat. No. 3,755,454, which is a division of Ser. No. 754,472, Aug. 21, 1968, abandoned. This application Apr. 18, 1974, Ser. No. 461,969

Int. Cl.[2] C07C *49/04*

U.S. Cl. 260—593 R **2 Claims**

1. An organic peroxide; namely, 4-t-butylperoxy-4-methyl-2-pentanone.

3,892,812

STEROIDAL INTERMEDIATES

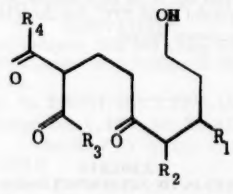
Gabriel Saucy, Essex Falls, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 259,724, June 5, 1972, Pat. No. 3,810,909, which is a division of Ser. No. 811, Jan. 5, 1970, Pat. No. 3,691,189. This application Feb. 25, 1974, Ser. No. 445,418

Int. Cl. C07c *49/18*

U.S. Cl. 260—594 **2 Claims**

1. A compound of the formula



wherein R_1, R_2 and R_4 are selected from the group consisting of hydrogen and lower alkyl and R_3 is selected from the group consisting of hydrogen, lower alkyl, lower alkyl phenyl and phenylalkyl.

3,892,813

SULFUR OXIDATION OF OLEFINS TO KETONES

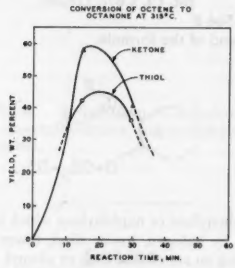
Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed July 6, 1970, Ser. No. 52,310

Int. Cl. C07c *45/02*

U.S. Cl. 260—597 R **9 Claims**

1. The process for the conversion of a feed hydrocarbon having a single carbon-carbon double bond to a ketone having the same carbon atom content as said feed, which comprises maintaining in the liquid phase a mixture of the feed, water, and sulfur at a temperature in the range from about 225 to 325°C. for a period sufficient to produce an appreciable amount of said ketone, wherein for each mol of the feed the mixture contains an amount of sulfur in the range from about 0.15 to 2 mols, and an amount of water in the range from about 2 to 100 mols, said period being in the range from about 5 to 60 minutes; wherein said feed contains at least 3 carbon atoms, wherein at least one carbon atom of the carbon-carbon double bond pair is a secondary carbon, wherein said pair is not included in a six-membered carbocyclic ring, wherein said



feed is liquefiable at a temperature within said range, and wherein said feed is either an n-alkene or a cycloalkene.

3,892,814

CYCLOPROPANE DERIVATIVES

Ralph Alexander Raphael; Robert Douglas Hutton Murray, and Roy William Mills, all of Glasgow, Scotland, assignors to National Research Development Corporation, London, England

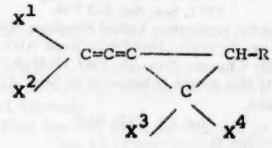
Filed Dec. 22, 1971, Ser. No. 211,110

Claims priority, application United Kingdom, Dec. 24, 1970, 61320/70

Int. Cl. C07c *33/02*

U.S. Cl. 260—617 R **8 Claims**

1. An allene compound of the formula:



wherein X^1 and X^2 independently represent an alkyl group of 1 to 4 carbon atoms or together represent a $-(CH_2)_n-$ group where n is 4 or 5, X^3 and X^4 independently represent an alkyl group of 1 to 4 carbon atoms and R represents a hydroxymethyl group.

3,892,815

FLAME RETARDANT COMPOUNDS AND COMPOSITIONS OF MATTER

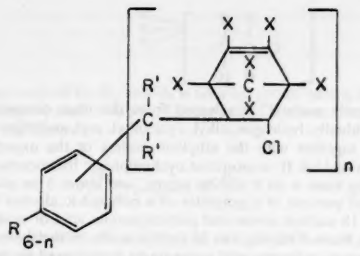
Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 13, 1973, Ser. No. 397,197

Int. Cl. C07c *25/18*

U.S. Cl. 260—649 R **8 Claims**

1. A compound having the formula:



wherein X is hydrogen or chlorine or bromine, at least two X's being chlorine or bromine, R' is hydrogen or lower alkyl, R is hydrogen or alkyl of from 1 to about 4 carbon atoms, and *n* is an integer of from 2 to 6.

3,892,816

PROCESS FOR OXYCHLORINATION OF ETHYLENE

Albert T. Kister, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 19, 1972, Ser. No. 316,609
Int. Cl. C07c *17/02*
U.S. Cl. 260—659 A **7 Claims**

1. A process for production of ethylene dichloride by contacting ethylene, hydrogen chloride and molecular oxygen in the vapor phase in a reaction zone at a temperature of from about 450°F to about 670°F in the presence of a fixed-bed, supported cupric chloride catalyst, introducing all or substantially all of the ethylene to the upstream inlet portion of the reaction zone in a sufficient stoichiometric excess and adding hydrogen chloride and molecular oxygen and the remainder of the ethylene in cases where substantially all of the ethylene is added at said upstream inlet to the reaction zone at a sufficient plurality of points throughout the reaction zone to maintain the hydrogen chloride:ethylene molar ratio below about 0.7 and the oxygen:ethylene molar ratio below about 0.12 in the reaction mass during passage through the reaction zone, and separating the resulting ethylene dichloride containing reaction zone effluent into at least one ethylene dichloride containing liquid phase and an organic vapor phase of at least 55% ethylene.

3,892,817

PROCESS FOR PRODUCING CYCLOALKENES

Susumo Akutagawa, Tokyo; Hidenori Kumobayashi, Kanagawa, and Akira Komatsu, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1974, Ser. No. 447,409
Claims priority, application Japan, Mar. 1, 1973, 48-24643
Int. Cl. C07c *13/00*
U.S. Cl. 260—666 A **9 Claims**

1. A process for producing cyclopolyenes (1,5, . . . $4n + 5$) having $8 + 4n$ carbon atoms where n is an integer of from 1 to 7 comprising polymerizing cyclooctadiene in the presence of a rhenium catalyst on an alumina carrier or an alumina-boria carrier.

3,892,818

CATALYTIC CONVERSION OF HYDROCARBON CHLORIDES TO HYDROGEN CHLORIDE AND HYDROCARBONS

Gerhard Scharfe, Leverkusen, and Rolf-Ernst Wilhelms, Hamburg, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 7, 1972, Ser. No. 313,032
Claims priority, application Germany, Dec. 23, 1971, 2164074
Int. Cl. C07c *9/00*
U.S. Cl. 260—676 R **11 Claims**

1. A process for the catalytic conversion of a hydrocarbon chloride into a chlorine-free hydrocarbon, said hydrocarbon chloride being selected from the group consisting of a saturated aliphatic hydrocarbon, an unsaturated aliphatic hydrocarbon, a saturated cycloaliphatic hydrocarbon, an unsaturated cycloaliphatic hydrocarbon, a saturated aliphatic hydrocarbon substituted by at least one saturated aliphatic radical, a saturated aliphatic hydrocarbon substituted by at least one unsaturated aliphatic radical, an unsaturated aliphatic hydrocarbon substituted by at least one saturated aliphatic radical, an unsaturated hydrocarbon substituted by at least one saturated aliphatic radical, an unsaturated aliphatic hydrocarbon substituted by at least one unsaturated aliphatic radical, a saturated cycloaliphatic hydrocarbon substituted by at least one saturated aliphatic radical, a saturated cycloaliphatic hydrocarbon substituted by at least one unsaturated aliphatic radical, an unsaturated cycloaliphatic hydrocarbon substituted by at least one saturated aliphatic radical, an unsaturated cycloaliphatic hydrocarbon substituted by at least one unsaturated aliphatic radical, an aromatic hydrocarbon, an aromatic hydrocarbon substituted by at least one alkyl radical, and an aromatic hydrocarbon substituted by at least one alkenyl radical, at least one H atom of said hydrocarbon being replaced by chlorine, comprising contacting the hydrocarbon chloride in the gas phase with hydrogen in the presence of rhodium as catalyst and at a temperature of about 50° to 500°C.

3,892,819

IMPACT RESISTANT VINYL ESTER RESIN AND PROCESS FOR MAKING SAME

Daniel J. Najvar, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 21, 1973, Ser. No. 343,716
Int. Cl. C08g *45/04*
U.S. Cl. 260—836 **16 Claims**

1. A process for preparing a thermosettable resin having improved impact resistance in the thermoset state which comprises simultaneously reacting the epoxide moieties of a polyepoxide having an average of more than one epoxide group per molecule with the acid moieties of an unsaturated monocarboxylic acid and a liquid carboxy terminated polydiene rubber wherein the combined acid equivalents of said unsaturated acid and said polydiene ranges from about 0.8 to 1.2 equivalents per epoxide equivalent and wherein at least about 80 percent of said acid equivalents comprises said unsaturated acid and the balance between 0.01 and 20 percent comprises said polydiene, provided that the polydiene rubber content is at least about 4 weight percent.

3,892,820

THERMOPLASTIC POLYAMIDE URETHANE UREA RESINS OF IMPROVED PROPERTIES

Hachiro Goto, Takatsuki; Atsushi Tanaka, Ibaraki; Shiho Iizuka, Ibaraki, and Takahiko Kitamura, Ibaraki, all of Japan, assignors to Teijin Ltd., Osaka, Japan

Filed Oct. 2, 1973, Ser. No. 402,837
Int. Cl.² C08G *41/04*
U.S. Cl. 260—858 **4 Claims**

1. A thermoplastic polyamide urethane urea resin which is the reaction product of the four components as follows:

A. A linear polyhydroxyl oligomer having a hydroxyl group at both terminals, which is free from ethylene terephthalate unit, has an average molecular weight of 400 to 4,000, and is liquid at 80°C.,

B. a linear polyester oligomer having a hydroxyl group at both terminals, a molecular weight of 500 to 4,000, and a melting point of 50° to 220°C., 55 to 100 mol% of the molecular chain thereof consisting of ethylene terephthalate and ethylene-2,6-naphthalate units, said ethylene terephthalate unit occupying 50 to 85 mol% of the linear polyester oligomer, and said ethylene-2,6-naphthalate unit occupying 5 to 40 mol% of the linear polyester oligomer,

C. a linear polyamide oligomer having an average molecular weight of 400 to 4,000, and a melting point of 100° to 200°C., at least 80% of the terminal groups thereof being amino groups, and

D. an organic diisocyanate;

the composition of the reactants (A) through (D) satisfying the expressions as follows:

i. 0.8 $(D)/(A)+(B)+(C)$ (mol ratio) < 1,

ii. $(B)+(C)/(A)$ (weight ratio) $= 1.0 - 3.0$,

iii. $(C)/(B)+(C)$ (weight ratio) $= 0.05 - 0.85$,

and

iv. $(C)/(A)+(B)+(C)+(D)$ (weight %) $= 3 - 55$.

3,892,821

POLYESTERS BLENDED WITH CYCLIC ESTER POLYMERS

Joseph Victor Koleske; Clyde Jesse Whitworth, Jr., both of Charlestown, W. Va., and Robert Dean Lundberg, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

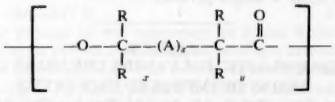
Division of Ser. No. 140,951, May 6, 1971, Pat. No. 3,781,381, which is a continuation-in-part of Ser. No. 812,314, April 1, 1969, abandoned. This application Oct. 11, 1973, Ser. No. 405,525

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **8 Claims**

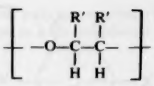
1. A thermoplastic composition consisting essentially of a blend of about 1 to about 95 weight percent of a cyclic ester polymer having a reduced viscosity of about 0.1 to about 15 and containing at least a major molar amount of recurring units I of the formula:

(I)



wherein each R, individually, is selected from the class consisting of hydrogen, alkyl, halo, and alkoxy, A is the oxy group; x is an integer from 1 to 4; y is an integer from 1 to 4; z is an integer of zero or one; with the provisos that (a) the sum of $x+y+z$ is at least 4 and not greater than 7, and (b) the total number of R substituents which are substituents other than hydrogen does not exceed 3, and up to a minor molar amount of recurring units II of the formula:

(II)



wherein each R′ is selected from the class consisting of, individually, hydrogen, alkyl, cycloalkyl, aryl, and chloroalkyl, and, together with the ethylene moiety of the oxyethylene chain of Unit II, a saturated cycloaliphatic hydrocarbon ring having from 4 to 8 carbon atoms, and about 5 to about 99 weight percent of a polyester of a polyhydric alcohol having 2 to 18 carbon atoms and polycarboxylic acid or acid anhydride thereof having 2 to 18 carbon atoms as the thermoplastic organic polymer, said percentages being based on the total weight of thermoplastic polymer and cyclic ester polymer.

3,892,822

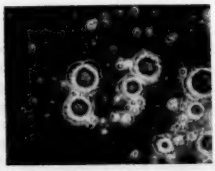
RECONSTITUTABLE VINYL ACETATE POLYMER POWDERS FROM NON-AQUEOUS DISPERSION

Arthur C. Frechtling, Watchung, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 20, 1974, Ser. No. 443,989

Int. Cl. C08f *15/20, 37/04*

U.S. Cl. 260—875 **9 Claims**



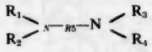
1. A method of preparing vinyl acetate polymers in a powder form which are readily converted to stable latices by addition of water which comprises:

a. rapidly adding with agitation, in one continuous operation about 3 to about 8 parts by weight of methacrylic acid to a stable non-aqueous dispersion containing 100 parts by weight of a vinyl acetate/dialkyl fumarate copolymer having about 0.5 to 6 percent by weight of dialkyl fumarate, copolymerized therein, wherein the alkyl groups contain about 8 to about 18 carbon atoms, in an organic diluent selected from the class consisting of aliphatic hydrocarbons containing from about 4 to about 12 carbon atoms and alicyclic hydrocarbons containing from about 5 to about 8 carbon atoms, at a temperature of about 20° to about 150°C. in the presence of a polymerization initiating amount of a free radical polymerization initiator;

b. maintaining a temperature of about 20°C to about 150°C for at least about 5 minutes whereby methacrylic acid is polymerized onto the surface of the vinyl acetate/dialkyl fumarate copolymer;

c. neutralizing the carboxyl groups of the methacrylic acid with about a stoichiometric amount of an organic amine selected from the group consisting of (1) trialkyl-amines having the formula

wherein each of R_1, R_2 and R_3 is an alkyl group having about 4 to about 10 carbon atoms, (2) tetraalkyl alkylene diamines having the formula



wherein each of R_1, R_2 and R_3 is as described above, R_4 is an alkyl group having about 4 to about 10 carbon atoms and R_5 is an alkylene radical having about 2 to about 10 carbon atoms and (3) a diamine having the formula

$$H_2N—R_5—NH_2$$

wherein R_5 is as defined above; and

d. recovering and drying the resultant product.

3,892,823

O-ETHYL-S-n-PROPYL-O-2-CYANOVINYL-THIONOTHIOL-PHOSPHORIC ACID ESTERS

Fritz Maurer; Hans-Jochem Riebel; Lothar Rohe, all of Wuppertal, and Ingeborg Hammann, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

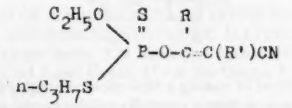
Filed Jan. 14, 1974, Ser. No. 433,011

Claims priority, application Germany, Jan. 18, 1973, 2302273

Int. Cl. C07f *9/16;* **A01n** *9/36;* **C07e** *121/02*

U.S. Cl. 260—940 **7 Claims**

1. An O-ethyl-S-n-propyl-O-vinyl-thionothiolphosphoric acid ester of the formula



(I)

in which

R is lower alkyl, carbo-lower alkoxy, or phenyl or naphthyl optionally substituted by halogen, nitro, nitrile, lower alkyl, lower alkoxy or halo-lower alkyl, and

R′ is hydrogen or lower alkyl.

3,892,824

S-ω-(ω-AMINOALKYLAMINO)ALKYL DIHYDROGEN PHOSPHOROTHIOATES

James R. Piper, and Thomas P. Johnston, both of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Filed Dec. 16, 1968, Ser. No. 784,231

Int. Cl. C07f *9/16*

U.S. Cl. 260—944 **5 Claims**

1. Compounds of the formula $RHN(C_nH_{2n})NH(C_nH_{2n})$-$SPO_3H_2$ wherein R is hydrogen or an alkyl group containing from 1 to 7 carbon atoms and each n has a value of from 2 to 6; and hydrates or alkali metal salts thereof.

3,892,825

UNITARY STACKED PRESSURE TOWER

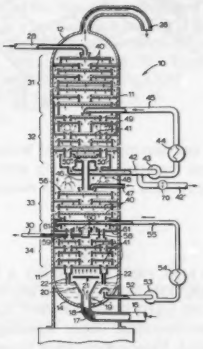
Don Barkley Nazzer, 861 George St., Sidney, Canada

Continuation-in-part of Ser. No. 859,344, Sept. 19, 1969, abandoned. This application June 14, 1972, Ser. No. 262,521

Int. Cl. B01f *3/04*

U.S. Cl. 261—114 R **2 Claims**

1. A stacked tower structure for carrying out a dual fluid isotope exchange process in two zones maintained at different, substantially constant temperatures, using hydrogen sulphide gas and water in a counterflow heavy water concentration process, including; an upright unitary pressure vessel of substantially uniform cross section having a cold isotope exchange zone and a hot isotope exchange zone, with said cold zone superposed over said hot zone; fluid transfer means at the top and bottom of said zones for passage of gas and water therethrough including gaseous fluid extraction means at the top of said hot zone for the removal of hot deuterium-enriched fluid therethrough, a temperature conditioning zone intermediate said exchange zones to provide direct heat exchange between cold water flowing downwardly from said cold zone and hot gas flowing upwardly from said hot zone including



heat exchange circuit means connecting said temperature conditioning zone with a heat exchanger located externally of said tower to provide cold water circulating downwardly through said zone in mixing relation with said gas and water to provide complementary cooling to said conditioning zone, to condition both fluids while within said conditioning zone to the temperature of the respective adjacent tower exchange zone to which the respective fluid flows, and water flow control means between said intermediate zone and said hot zone for controlling the quantity of water passing to said hot zone whereby the balanced exchange of deuterium in said hot isotope exchange zone is promoted.

3,892,826

METHOD FOR FORMING A CORED CONCRETE SLAB

Robert L. Yost, Decatur, Ind., assignor to Joseph J. Dues, Dayton, Ohio

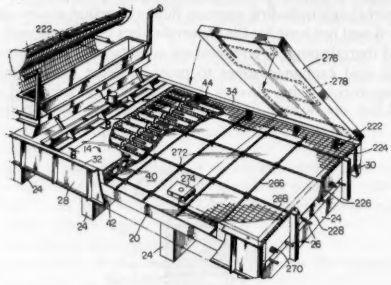
Division of Ser. No. 771,152, Oct. 28, 1968, Pat. No. 3,647,308. This application Sept. 14, 1971, Ser. No. 180,442

Int. Cl. B28b *1/08*

U.S. Cl. 264—72 **7 Claims**

1. The method of making a cored cementitious slab comprising the steps of providing an elongated mold having a bottom and upstanding sides for forming the bottom and side surfaces of a slab, placing a plurality of elongated mandrels in said mold adjacent to one end thereof and in a spaced and parallel relationship with respect to each other and said mold sides so as to extend longitudinally of said mold, and sequentially performing the following steps, depositing a first layer of cementitious material in relatively fluid form having a slump from about 1 inch to about 2 inches in said mold to a level generally even with the tops of said mandrels, laying elongated cementitious material supporting material in said mold over said mandrels and said first layer, depositing a second layer of cementitious material in relatively fluid form having a slump from about 1 inch to about 2 inches in said mold over said first layer and said cementitious material supporting material while continuously imparting troweling motion to each of said mandrels, moving said mandrels from adjacent to said one end of

said mold toward the other end of said mold to remove the mandrels from the slab at a rate in excess of about 1 foot per minute and faster than said cementitious material becomes



self-supporting, and leaving said mold bottom and sides and said cementitious material supporting material behind said mandrels to support said cementitious material until self-supporting.

3,892,827

METHOD FOR PRECIPITATING A LAYER OF SEMICONDUCTOR MATERIAL FROM A GASEOUS COMPOUND OF SAID SEMICONDUCTOR MATERIAL

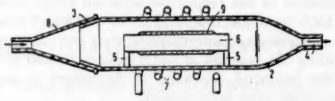
Wolfgang Keller, Pretzfeld; Arno Kersting, Erlangen, and Konrad Reuschel, Vaterstetten, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Oct. 29, 1969, Ser. No. 872,278

Claims priority, application Germany, Oct. 30, 1968, 1805970

Int. Cl. B29c *23/00*

U.S. Cl. 264—81 **1 Claim**



1. Method of producing a tubular silicon body wherein the outer surface of a hollow cylindrical body is treated with soot and heated by electric current, in a flowing reaction gas of a silicon halogen compound ($SiHCl_3$) and hydrogen, to a temperature ranging between 1050°–1250°C until the silicon layer precipitated on the outer surface of the carrier body attains the wall thickness of the tube being produced, cooling the carrier and the silicon body and pulling apart the tubular silicon layer and the carrier body, without damaging said silicon layer.

3,892,828

METHOD OF MAKING PLASTIC ARTICLES HAVING EASILY SEVERABLE FLASH

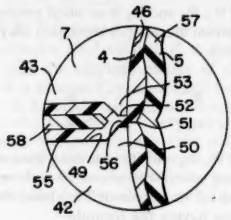
Arden R. Weatherly, Downers Grove, and Carson F. Buckman, Park Forest, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed June 7, 1973, Ser. No. 367,998

Int. Cl. B29c *17/07, 17/12;* **B29d** *9/00*

U.S. Cl. 264—89 **9 Claims**

8. A method of making an article from a laminate comprising an inner layer of thermoplastic material and an outer layer of material different than the inner layer and comprised of low density polyethylene comprising introducing such laminate into article forming mold sections having a configuration wherein islands of flash are developed, then closing the mold sections an extent sufficient to pinch the material and squeeze out the inner layer of material from between the parting areas of the mold sections leaving only an easily severable material



to form a web interconnecting the islands of flash with the article, and then expanding the laminate into said article within the mold formed by said sections when closed.

3,892,829

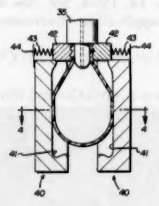
METHOD OF MAKING BLOWN PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 3, 1973, Ser. No. 403,051

Int. Cl. B29c *17/07*

U.S. Cl. 264—89 **11 Claims**



1. In a method of making a blow molded article of non-circular cross-section from a generally tubular plastic parison of essentially circular cross-section and of substantially uniform wall thickness, the steps of:

1. blowing the parison to the shape of a pre-form within a first blow mold cavity, said pre-form having a substantially uniform wall thickness and an exposed outer surface approximately the same as but less than the exposed outer surface of the article,
2. interposing the pre-form between a pair of blow mold sections which, when closed, have cavity-defining walls spaced apart a distance less than the cross-sectional dimension of said pre-form,
3. simultaneously (a) closing the mold sections progressively on said pre-form, (b) progressively deflecting the pre-form by its contact with said walls to a shape closely approaching that of said article, and (c) thermally stabilizing the contacted portion of the pre-form, while preserving the substantially uniform wall thickness and the exposed outer surface of said pre-form, and
4. finally blowing the deflected shape to complete the formation of said article interiorly of the closed mold sections.

3,892,830

PRECISE TEMPERATURE ADJUSTMENT OF REHEATED PARISON PREFORMS

Jimmie E. Hudson, Bartlesville, Okla., and Jimmy W. Snelson, Orangeburg, N.Y., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 242,385, April 10, 1972, Pat. No. 3,790,319. This application Oct. 3, 1973, Ser. No. 402,983

Int. Cl. B29c *17/07*

U.S. Cl. 264—94 **6 Claims**

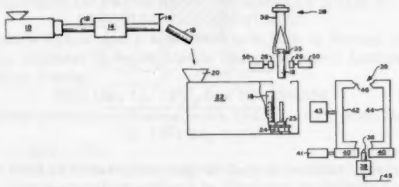
1. A method of forming a biaxially oriented hollow article having an irregular configuration wherein at least a portion

thereof has a ratio of a major axis to a minor axis of at least 1.25 to 1 comprising:

introducing a cylindrical thermoplastic parison preform into a heating zone;

imparting sufficient heat to bring the entire parison preform to orientation temperature;

thereafter cooling a portion of at least one side of said parison which is to correspond to said major axis to an average of 0.25° to 10°F below the temperature of the rest of the parison but still within the range of orientation



temperature by contacting said parison for a time within the range of 0.001 to 1 second with a textured temperature adjustment finger, said textured temperature adjustment finger having grooves at least 1/32 of an inch deep and having 40 to 60 per cent of the surface made up of lands and the remaining portion made up of grooves;

placing said parison in a molding zone with said thus cooled portion of said parison being aligned with a wall across from a major axis of said zone; and

creating a pressure differential to expand said parison out into conformity with said zone.

3,892,831

METHOD OF MANUFACTURE OF TENNIS RACKETS OF REINFORCED SYNTHETIC MATERIAL

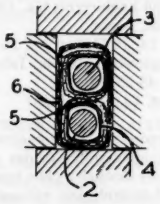
Jacques André Robin, 125 Boulevard Malesherbes, Paris 17, and Michel Roger Guyot, 17 rue des Quatre Vents, Paris 6, both of France

Continuation-in-part of Ser. No. 160,758, July 8, 1971, abandoned. This application May 11, 1973, Ser. No. 359,404

Claims priority, application France, July 29, 1970, 70.27924

Int. Cl. B29c *27/26*

U.S. Cl. 264—103 **4 Claims**



1. Process for the manufacture of tennis racket frames from woven tubular sheaths of filamentary synthetic reinforced material impregnated with a polymerizable synthetic material, the steps of placing at least two superposed inflatable sheaths having long axes in contact with their long axes parallel, connecting the superposed sheaths to each other and forming between them at least one reinforcing web of intercrossed filamentary material the filaments of which are at approximately 45° to the longitudinal axis of the sheaths, surrounding the superposed connected sheaths over their entire peripheries with a supplementary woven cover banding the sheaths together, disposing the resulting superposed banded structure of multiple tubes in a mold which maintains the superposed structure and having the shape of a tennis racket frame with said resulting banded structure of multiple tubes forming an integral handle and hoop to reinforce the tennis racket frame at the points of localization of forces to give a banding effect, impregnating the structure of multiple tubes with a polymerizable synthetic material, inflating the sheaths, web and cover into contact with the mold and then polymerizing the polymerizable synthetic material.

3,892,832

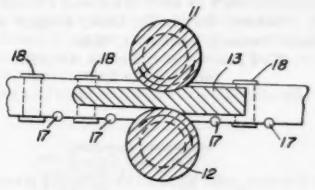
METHOD OF COMPRESSING AND ROLLING POWDER

John A. Schey, 716 S. Bruner St., Hinsdale, Ill. 60521

Division of Ser. No. 67,910, Aug. 28, 1970, Pat. No. 3,746,701, which is a division of Ser. No. 691,109, Dec. 7, 1967, Pat. No. 3,561,240, which is a continuation-in-part of Ser. No. 587,358, Sept. 16, 1966, which is a continuation-in-part of Ser. No. 444,637, April 1, 1965, abandoned. This application June 14, 1973, Ser. No. 369,885

Int. Cl. B22f *3/18*

U.S. Cl. 264—109 **2 Claims**



1. A method of preventing edge cracking when continuously rolling and compressing powder material between at least one pair of spaced, parallel aligned rolls comprising:

a. feeding the powder material between a pair of rotating rolls,

b. reducing the thickness of the powder material by compacting as it passes between the rolls,

c. engaging the lateral edges of said compacted material with a pair of substantially incompressible elongated restraint members being substantially inflexible throughout a zone of compaction with said rolls,

d. restraining the lateral edges of the compacted material during said compaction, and

e. moving said restraint members rectilinearly at a velocity substantially equal to the peripheral velocities of said rolls with the compact material to prevent lateral deformation of compacted material while reducing the thickness thereof, whereby the tensile forces along the lateral edges of the compacted material are sufficiently reduced to prevent edge cracking.

3,892,833

METHOD OF MAKING AN ION-SELECTIVE ELECTRODE

Masumi Hattori, and Teizou Maeda, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Nov. 8, 1973, Ser. No. 413,896

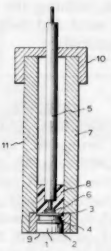
Claims priority, application Japan, Nov. 10, 1972, 47-113350; Nov. 10, 1972, 47-113351; June 20, 1973, 48-70324; June 20, 1973, 48-70325

Int. Cl. B01k *3/10*

U.S. Cl. 264—115 **2 Claims**

1. A method of making an ion-selective membrane for an ion-selective electrode, comprising the steps of coating the

surface of CdS granules with an Ag_2S layer formed by reacting said CdS granules with an $AgNO_3$ solution and compressing



the resultant granules to form a membrane, said membrane being responsive to cadmium ions in solution.

3,892,834

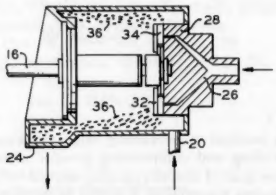
SURFACE ACTIVE AGENT TO REDUCE AGGLOMERATION IN DRY DIE-FACE PELLETIZING

James E. Pritchard, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 9, 1974, Ser. No. 431,858

Int. Cl. B29b *1/03*

U.S. Cl. 264—142 **9 Claims**



1. In a process for producing pellets from normally solid polymer of at least one mono-1-olefin having 2 to 8 carbon atoms per molecule, wherein said polymer is heated to a molten condition, extruded through a plurality of orifices in a die having a dry die-face, severed adjacent said die-face to produce said pellets, said pellets thereafter being thrown out toward an inner surface of a housing where they contact a stream of water moving around said inner surface and axially away from said die face, the improvement comprising incorporating 0.0025 to 0.35 weight percent based on the weight of said water of a surface active agent into said water to reduce agglomeration of said pellets.

3,892,835

METHOD OF MANUFACTURING HOT PRESSED CERAMIC MATERIAL BASED ON SILICON NITRIDE

Martin Richard Holdsworth, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

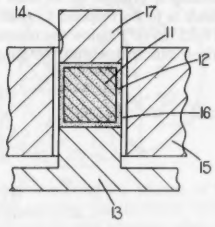
Filed Mar. 30, 1973, Ser. No. 346,597

Claims priority, application United Kingdom, Apr. 6, 1972, 15883/72

Int. Cl. C04b *33/64*

U.S. Cl. 264—332 **8 Claims**

1. A method of manufacturing hot pressed ceramic material based on silicon nitride, comprising the steps of starting with a graphite die defining a die cavity for receiving the ceramic material to be hot pressed, introducing the ceramic material into the die cavity, providing a compound of alumina or a compound of aluminium which decomposes to alumina at elevated temperatures between said ceramic material and the walls of the die cavity, heating the ceramic material to an elevated temperature and simultaneously applying pressure to said ceramic material to hot press the material, said compound of alumina or a compound of aluminium which decomposes to alumina at elevated temperatures reacting with the



ceramic material at said elevated temperature to form a silicon aluminium oxynitride as a substantially non-porous, continuous barrier layer at or near the surface of the ceramic material so that reaction between the ceramic material and the graphite die is substantially prevented.

3,892,836

SINTERED NO_x REDUCTION CATALYSTS

William A. Compton; Joseph F. Nachman, and Manfred I. Seegall, all of San Diego, Calif., assignors to International Harvester Company, San Diego, Calif.

Filed Jan. 7, 1974, Ser. No. 431,423

Int. Cl. B01d *53/34*; **B01j** *11/06*

U.S. Cl. 423—213.2 **5 Claims**

1. In the elimination of nitrogen oxides from a gas stream by bringing the gas into contact with a nitrogen oxide reducing catalyst, the improvement wherein the gas stream is contacted at a temperature of at least 600°F. with a catalyst which consists essentially of from 25 to 75 percent praseodymium oxide of the formula PrO_x where x is 1.5 to 2.0 and from 75 to 25 percent of a cerium oxide.

3,892,837

PROCESS FOR REMOVING SULFUR OXIDES FROM GASES

Hisashi Uchiyama; Naohiko Meno, both of Hamamatsu; Teizo Senjo, Tokyo, and Makio Kobayashi, Osaka, all of Japan, assignors to Fuji Kasui Engineering Co., Ltd. and Sumitomo Metal Industries, Ltd., Japan

Filed June 14, 1973, Ser. No. 369,834

Claims priority, application Japan, July 25, 1972, 47-74358; Mar. 5, 1973, 48-25211

Int. Cl. C01b *17/00*

U.S. Cl. 423—242 **6 Claims**

1. In a process for removing sulfur oxides from a combustion exhaust gas containing sulfur oxides which comprises passing said gas upwardly through a plate tower provided with at least one perforated or grid plate without weir and downcomer, and subsequently passing a liquid absorbent containing calcium carbonate in aqueous suspension downwardly through said plate tower in countercurrent flow relationship to the upflowing gas; the improvement in which

a. said perforated or grid plate has a free-space ratio of 0.25–0.60,

b. the upflowing has had a superficial gas velocity in the tower within the region exhibiting undulation,

c. the ratio of the liquid absorbent flow to the gas flow (L/G) is 0.5 or more, and

d.

1. the pH of the circulating liquid absorbent,
2. total solid content in the liquid absorbent and
3. ratio of solid calcium carbonate content to the total solid content in the liquid absorbent, all at the outlet of

the tower, are maintained within the range of 6–8, 3–15 wt% and 5–35 wt%, respectively, and each of (1), (2) and (3) are obtained by supplying at least one calcium compound selected from the group consisting of calcium oxide, calcium hydroxide and calcium carbonate to the circulating liquid absorbent.

3,892,838

METHOD OF PRODUCING THERMALLY STABLE URANIUM CARBONITRIDES

Mitsuhiro Ugajin, and Ichiro Takahashi, both of Ibaragi, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Oct. 12, 1972, Ser. No. 296,851
Claims priority, application Japan, Oct. 16, 1971, 46-81762
Int. Cl. C01g *43/00*
U.S. Cl. 423—253 **2 Claims**

1. A process for producing a thermally stable uranium carbonitride which comprises

adding to a material selected from the group consisting of uranium carbide and a mixture of uranium and carbon

a metal selected from the group consisting of tungsten, molybdenum and mixtures thereof in an amount of 0.2 to 5.3 weight percent of said metal based upon the produced uranium carbonitride;

melting the resulting mixture under the pressure of nitrogen to insure no yield of uranium dicarbide or uranium metal, and

producing a resulting uranium carbonitride containing at least a part of said metal dissolved in the matrix.

3,892,839

PROCESS FOR FORMING NITROSYL TETRAFLUOROBORATE

James L. Adcock, Cambridge, and Richard J. Lagow, Manchester, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 6, 1974, Ser. No. 448,717
Int. Cl. C01b *35/00*
U.S. Cl. 423—277 **4 Claims**

1. The process for forming nitrosyl tetrafluoroborate which comprises reacting, in the substantial absence of water, boron nitride, oxygen gas and fluorine gas wherein the energy for the reaction is provided either by ultraviolet light or by heat.

3,892,840

METHOD OF PRODUCING AN OXYGEN CONTAINING SILICON COMPOUND

Jorgen Abildtrup, Augustenborg, Denmark, assignor to Danfoss A/S, Nordberg, Denmark

Continuation of Ser. No. 208,914, Dec. 16, 1971, abandoned, which is a continuation of Ser. No. 43,144, June 3, 1970, abandoned. This application Jan. 10, 1974, Ser. No. 432,197
Int. Cl. C01b *21/06, 33/00*
U.S. Cl. 423—325 **2 Claims**

1. A method of producing shaped elements of silicon oxynitride essentially free of SiO_2, which comprises forming a silica-free powder compact consisting essentially of powdered silicon and heating the compact at a temperature in the range 1200°C to 1600°C and under a gaseous atmosphere consisting essentially of nitrogen and free oxygen, for a period of from 1–3 hours, where the gaseous atmosphere contains an amount of free oxygen gas sufficient to maintain the partial pressure of oxygen in the reaction zone during the reaction period lower than 10^{-16} atmospheres but greater than 10^{-26} atmospheres.

3,892,841

ENHANCING THE VISIBILITY OF IMMUNODIFFUSION PRECIPITIN BANDS IN HUMAN PLACENTAL LACTOGEN TEST

William Frederick Barg, Jr., Monsey, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed July 11, 1973, Ser. No. 378,352
Int. Cl. G01n *31/02, 33/16*
U.S. Cl. 424—12 **4 Claims**

1. A method of enhancing the visibility or making visible human placental lactogen antigen: human placental lactogen antibody precipitin bands in an incubated immunodiffusion plate containing same, said plate made up of a gel selected from the group consisting of agar and agarose, which comprises the steps of:

a. washing said incubated immunodiffusion plate containing said precipitin bands with water, about 0.15 molar neutral aqueous salt solutions, a 0.002 to 0.10 molar aqueous solution of tris-(hydroxymethyl)-aminomethane, a 0.002 to 0.10 molar aqueous solution of ammonia, having a pH of about 9, or a 0.002 to 0.01 molar aqueous solution of sodium ethylene diaminetetraacetate having a pH of about 9;

b. contacting said washed plate with about 0.01 to about 0.2 w/v percent aqueous solution of a soluble metal salt adjusted to or maintained at a pH of from about 5 to about 7.5, in such a manner to put said soluble metal salt on said gel, wherein the metal is selected from the group consisting of copper and zinc; and

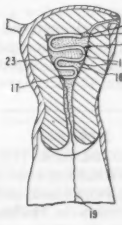
c. rinsing said plate with water or saline solution.

3,892,842

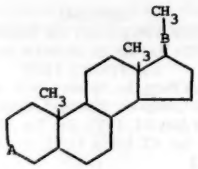
INTRAUTERINE CONTRACEPTIVE DEVICE FOR RELEASING STEROID HAVING DOUBLE BOND FUNCTIONALITY

Alejandro Zaffaroni, Atherton, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 176,926, Sept. 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 884,305, Nov. 11, 1969, abandoned, which is a continuation-n-part of Ser. No. 864,175, Oct. 6, 1969, abandoned. This application Oct. 16, 1973, Ser. No. 406,951
Int. Cl. A61m *31/00*
U.S. Cl. 424—22 **12 Claims**



1. An intrauterine device adapted for insertion and placement in a uterine cavity for the administration of a pharmaceutically acceptable antifertility steroid to the cavity, said device comprising a matrix formed of a non-toxic biologically inert polymeric release rate controlling material containing a locally, contraceptively active steroid and permeable to the passage of the steroid, having the structural formula:



wherein A is a member selected from the group consisting of

C-OH, C...OH, C-OR and C...OR; B is a member selected from the group consisting of

C-OH, C...OH, C-OR and C...OR; R is a member selected from the group consisting of the acyl moiety of a pharmaceutically acceptable acid of 1 to 18 carbons and a lower alkyl of 1 to 8 carbons, said steroids having a sole double bond at Δ^1, Δ^4 or Δ^5 positions, with a double bond at the Δ^1 and Δ^4 position when A and b are both

provided that B is not

when A is

and the double bond is at the Δ^4 position, and wherein the device when placed in a uterus, meters the flow of an effective amount of the steroid up to 1500 micrograms per day for an antifertility effect through the material at a controlled and continuous rate over a prolonged period of time, essentially without systemic progestational effect.

3,892,843

PROPHYLACTIC DENTAL COMPOSITIONS

Joseph C. Muhler, R.R. 2, Sturgis, Mich. 49091, and Howard R. Alexander, Prescott, Ariz. 86201

Filed Aug. 13, 1973, Ser. No. 387,678

Int. Cl. A61k *9/00*

U.S. Cl. 424—52 **36 Claims**

1. A prophylactic dental cleaner and polisher comprising feldspar in finely-divided state, substantially all of the particles passing through a 20 mesh screen, and the essential particles have a size range of about 37 microns to about 420 microns.

3,892,844

METHOD OF PROTECTING THE SKIN FROM ULTRAVIOLET RADIATION

Gustav Erlemann, Basel, Switzerland, and Dr. Hellmut Ippen, Haan, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 883,993, Dec. 12, 1969, abandoned. This application July 20, 1972, Ser. No. 273,561

Claims priority, application Switzerland, Dec. 16, 1968, 18694/68

Int. Cl.[2] A61K *7/42*

U.S. Cl. 424—59 **4 Claims**

1. A method of protecting skin from erythema inducing ultraviolet radiation which comprises applying to the skin an effective amount of a sunscreen composition comprising from about 1% by weight to about 30% by weight of an active ingredient comprising a compound selected from the group consisting of cytosine, uracil, guanine, 5-chlorouracil and mixtures thereof, and an inert, dermatologically acceptable carrier material selected from the group consisting of an ointment, a cream, a milk, a lotion and an aerosol.

3,892,845

HAIR SHADE ADJUSTER

Andrew J. Cunningham, Highland Lakes, and Fred M. Tuffile, Lakeville, both of Mass., assignors to Avon Products, Inc., N.Y.

Filed Sept. 29, 1972, Ser. No. 293,471

Int. Cl. A61k *7/12*

U.S. Cl 424—62 **10 Claims**

1. A method of removing the color of dyed keratin fibers which comprises:

applying to the fibers an effective amount of an aqueous composition comprising a combination of from about 1 to 15 parts of an oxidative dye reducing agent of zinc sulfoxylate formaldehyde, potassium sulfoxylate formaldehyde, sodium sulfoxylate formaldehyde, calcium sulfoxylate formaldehyde, zince hydrosulfite, potassium hydrosulfite, sodium hydrosulfite or calcium hydrosulfite and from about 1 part to 25 parts of disulfide reducing agent capable of cleaving covalent disulfide linkages of thioglycolic acid, dithiotreitol, potassium bisulfate, sodium bisulfate, potassium bisulfite, sodium bisulfite, potassium bisuflide, thiourea, tetrakishydroxyalkyl phosphonium chloride, tris(hydroxyalkyl)phosphine or tris(hydroxyalkyl)phosphine oxide wherein the above alkyl groups are C_1–C_3 hydrocarbons,

treating the fibers with the reducing agents until the desired color shade is produced, and

removing the reducing agents from the fibers.

3,892,846

ANIMAL LITTER RESISTANT TO AMMONIA ODOR FORMATION

Joseph S. Wortham, Lake City, Fla., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 47,904, June 19, 1970, abandoned. This application Sept. 12, 1972, Ser. No. 288,470

Int. Cl. A61l *13/00*

U.S. Cl. 424—76 **17 Claims**

1. An animal litter comprising a urine-absorbent material containing a salt selected from the group consisting of Al, Zn, Sn, Ca and Mg of an hydroxamic acid, in an amount sufficient to inhibit the decomposition of urea to ammonia when wetted by urine.

3,892,847

SPINAL ANESTHESIA USING SMALL AMOUNT OF SAXITOXIN

Herbert J. F. Adams, Westboro; Murray R. Blair, Jr., Sudbury; Robert N. Boyes, Auburn; Maxim I. Lebeaux, Shrewsbury, and Helen G. Vassallo, Worcester, all of Mass., assignors to Astra Pharmaceutical Products, Inc., Worcester, Mass.

Filed Aug. 14, 1973, Ser. No. 388,146

Int. Cl. A61k *27/00*

U.S. Cl. 424—95 **4 Claims**

1. A method for anesthetizing a mannal comprising administration by injection into the subarachnoid space of the intact mannal, a pharmaceutical composition containing saxitoxin as active ingredient in amount effective for producing anesthesia.

3,892,848

MICROBIOLOGICAL PRODUCTION OF BIOLOGICALLY ACTIVE 8,8'-BI-1H-NAPHTHO[2,3-C]PYRANS AND PRODUCTS

James Jiu, and Seth S. Mizuba, both of Morton Grove, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jan. 31, 1974, Ser. No. 438,258

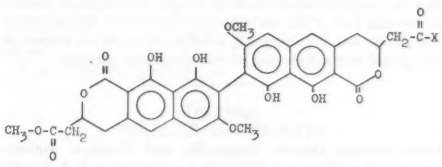
Int. Cl. A61k *21/00*; C07c *7/46*; C12d *9/00*

U.S. Cl. 424—115 4 Claims

1. A process for producing an anti-microbial product comprising growing *Spicaria divaricata* NRRL 5771 in an aqueous nutrient medium, extracting said aqueous nutrient medium containing *Spicaria divaricata* NRRL 5771 with organic solvent to provide organic solvent extracts, separating said organic solvent extracts from said aqueous nutrient medium containing *Spicaria divaricata* NRRL 5771, and evaporating the organic solvent.

2. The anti-microbial product produced by the process of claim 1.

3. The process of claim 1, wherein the anti-microbial product of claim 1 is subjected to column chromatography to provide compounds of the formula



in which X represents methyl or methoxy.

3,892,849

ANTIBIOTIC 21,190 RP

Denise Mancy, Charenton; Jean Florent, and Jean Preud'Homme, both of Paris, all of France, assignors to Rhone-Poulenc, S.A., Paris, France

Division of Ser. No. 309,810, Nov. 27, 1972, Pat. No. 3,822,350. This application Aug. 21, 1973, Ser. No. 389,638

Claims priority, application France, Nov. 29, 1971, 71.42683

Int. Cl. H61k *21/00*

U.S. Cl. 424—118 6 Claims

1. A feedstuff composition comprising an animal feedstuff and 0.1 to 0.0001% by weight of said feedstuff of the antibiotic herein designated 21, 190 RP, which possesses the following characteristics: it is a white crystalline powder, melting at 226°–228°C., soluble in water at pH 9 and in dimethylformamide, sparingly soluble in methanol and ethanol, and practically insoluble in hexane and benzene; it contains carbon, hydrogen; oxygen and chlorine and has the elementary composition: C = 50.5% H = 6.6% O = 38.4% Cl = 4.5%; its ultra-violet spectrum in aqueous 0.1N sodium hydroxide solution shows an absorption maximum at 292 nm ($E_{1\ cm}^{1\%} = 33$) and an absorption minimum at 257 nm ($E_{1\ cm}^{1\%} = 33$); its infra-red spectrum (determined with a mixture with potassium bromide) shows principal absorption bands as follows: 3,440 strong, 2,970 medium, 2,9300 strong, 2,900 shoulder, 2,840 shoulder, 1,735 strong, 1,715 medium, 1,630 medium, 1,570 medium, 1,335 shoulder, 1,305 shoulder, 1,248 strong, 1,220 weak, 1,192 medium, 1,165 medium, 1,122 strong, 1,090 strong, 1,060 strong, 1,035 very strong, 975 medium, 942 medium, 920 shoulder, 900 weak, 865 medium, 848 weak, 828 weak, 815 weak, 775 medium, 730 medium, 690 weak, 678 very weak, 655 weak, 630 shoulder, 612 weak, 570 weak, 548 weak, 525 very weak, 510 very weak; and its optical rotation is $[\alpha]_D^{20} = +3° \pm 3°$ ($c = 0.5$, 0.1N NaOH), $[\alpha]_{436}^{20} = +7° \pm 3°$ ($c = 0.5$, 0.1N NaOH), $[\alpha]_{365}^{20} = 20° \pm 3°$ ($c = 0.5$, 0.1N NaOH).

3,892,850

PIMARICIN AND PROCESS OF PRODUCING SAME

Adrianus Petrus Struyk, and Jacques Maurits Waisvisz, both of Delft, Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Mar. 7, 1957, Ser. No. 644,609

Claims priority, application Netherlands, Mar. 13, 1956, 5620534

Int. Cl. A61k *21/00*

U.S. Cl. 424—119 6 Claims

1. A substance having antibiotic properties in relation to saprophytic and parasitic fungi and yeasts which in the pure state is a white crystalline compound which begins to decompose at about 150°C., gives no color reaction with ferric chloride, which gives the concentrated phosphoric acid a pink, unstable color, which decolorizes bromine water, which is slightly soluble in water (about 8 mgs. in 100 ml at 20°C.) and more soluble in alcohols and is soluble in pyridine, dimethylformamide, dimethylacetamide, glacial acetic acid, and alkali hydroxides, which is practically insoluble in aliphatic hydrocarbons, has a specific roatation $\alpha_D^{25} = +250°$ (in a concentration of 0.083% in 100% methanol), which has a molecular weight of about 685 and an empirical formula of $C_{33}H_{50}NO_{14}$, and which displays maximum absorption of ultra violet light at 290, 304 and 318 mμ with a shoulder at about 280 and a minimum at about 250 mμ and in a potassium bromide plate exhibits the following infra red absorption (in cm^{-1}): 3460, **2985,** 1721, 1637, 1577, 1441, 1401, 1381, 1275, 1269, 1238, 1192, 1176, 1136, 1109, 1066, 1006, 988, 948, 887, 855, 844, 803, 794.

3,892,851

CLEAR AQUEOUS ANTACID SOLUTION CONTAINING A POLYMERIC MEGLUMINE-HEXITOL-ALUMINUM HYDROXIDE COMPLEX AND PREPARATION THEREOF

Emil T. Hinkel, Jr., Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 152,963, June 14, 1971, abandoned. This application July 5, 1973, Ser. No. 376,349

Int. Cl. A61k *27/00*

U.S. Cl. 424—157 20 Claims

1. A clear aqueous antacid solution having a pH from about 8.5 to 9.8 comprising water and an effective amount of a polymeric meglumine-hexitol-aluminum hydroxide complex which has mole ratios of Al:hexitol:meglumine of about 1:0.333–1.333:0.12–0.50 where hexitol is sorbitol or mannitol.

3,892,852

PHARMACEUTICAL COMPOSITIONS CONTAINING CYSTEINE DERIVATIVES

Maurice Joullie, Yvelines; Lucien Lakah, Paris; Gabriel Maillard, Paris, and Pierre Muller, Paris, all of France, assignors to Recherches Pharmaceutiques et Scientifiques, France

Filed June 7, 1973, Ser. No. 367,827

Claims priority, application France, June 15, 1972, 72.21606

Int. Cl.[2] A01N *9/00*

U.S. Cl. 424—180 7 Claims

1. A pharmaceutical composition for use in securing a reduction in atheromatous deposits and hypercholesteroloma which comprises a mixture of L S-allyl cysteine and β-benzylidenebutyrylglucosamine and a pharmaceutical diluent.

3,892,853

STABILIZED ALOE VERA GEL AND PREPARATION OF SAME

Henry H. Cobble, Garland, Tex., assignor to Aloe "99" Incorporated, Dallas, Tex.

Continuation of Ser. No. 640,358, May 22, 1967, abandoned. This application Jan. 25, 1971, Ser. No. 109,565
Int. Cl. A61k *27/14*
U.S. Cl. 424—195 10 Claims

1. The process of stabilizing the clear gel from the leaf of aloe vera which comprises:

a. mechanically separating the nonbruised and nondiscolored aloe vera gel matrix from the outer green cortex of the aloe vera leaf;

b. homogenizing said aloe gel matrix and adding a catalytic proportion of hydrogen peroxide thereto;

c. heating said gel containing said oxidant to a temperature within the range of from about 35°C to about 80°C for a sufficient time to cause said gel to assume a lighter appearance;

d. adding an effective proportion relative to said oxidant of a nontoxic antioxidant to stop catalytic oxidation; and

e. adding an effective proportion relative to said antioxidant of a nontoxic buffer substance to maintain the pH of the gel solution at a value between pH 4 and pH 6.

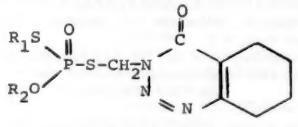
3,892,854

CONTROL OF PESTS WITH O,S-DIALKYL-S-(4-OXA-1,2,3-BENZATRIAZINYL)-DITHIAPHOSPHATES

Jozef Drabek, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 7, 1974, Ser. No. 495,459
Division of Ser. No. 315,971, Dec. 18, 1972, Pat. No. 3,845,053.
Claims priority, application Switzerland, Dec. 23, 1971, 18828/71, Nov. 7, 1972, 16185/72
Int. Cl. A01n *9/36*
U.S. Cl. 424—200 6 Claims

1. A pesticidal composition for combatting pests selected from the group consisting of insects, acarids, and nematodes comprising (1) as active ingredient a pesticidally effective amount of a compound of the formula



wherein R_1 represents alkoxyalkyl with 1 to 5 and 1 to 3 carbon atoms respectively in each of the moieties, or alkylthioalkyl with 1 to 5 and 1 to 3 carbon atoms respectively in each of the moieties and R_2 represents alkyl with 1 to 5 carbon atoms, and (2) a suitable carrier.

3,892,855

METHOD FOR FERTILE BREEDING CONTROL IN FEMALE BOVINE

George E. Short, Arlington Heights, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 10, 1973, Ser. No. 405,045
Int. Cl.[2] A61K *17/00*
U.S. Cl. 424—238 4 Claims

1. A method for fertile breeding control in female bovine comprising:

a. establishing an estrus and ovulation blocking period of 4 to 12 days by administering subcutaneously for 4–12 days to a female bovine an implant of biologically acceptable polymer containing at least 6 mg. of a progestin selected from the group comprising 17α-acetoxy-11β-methyl-19-norpregn-4-ene-3,20-dione, chlormadinone acetate, dimethisterone, ethisterone, hydroxyprogesterone, hydroxyprogesterone caproate, medroxyprogesterone, norethynodrel, progesterone, 3-ethylenedioxy-17-acetoxy-6-methylpregn-5-en-20-one and 16,17-dihydroxy progesterone acetophenide and

b. administering upon removal of the implant by injection a luteolytic agent selected from the group consisting of at least 5 mg. of estrogens selected from the group comprising estradiol volerate, estradiol benzoate, estrone and mestranol and at least 30 mg. of PGF_2

3,892,856

TOPICAL STEROID FORMULATION

John Anthony Hill, East Brunswick, and Rudolfo Cilento, North Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 10, 1974, Ser. No. 459,754
Int. Cl.[2] A61K *17/00*
U.S. Cl. 424—241 21 Claims

1. A composition comprising from about 0.01% by weight to about 0.5% by weight of 21-chloro-9α-fluoro-Δ^4-pregnene-11β,16α,17α-triol-3,20-dione 16,17-acetonide, from about 1% by weight to about 35% by weight of polyethylene glycol having a molecular weight of from about 200 to about 7500, up to about 5% by weight of a bodying agent, and from about 65% by weight to about 99% by weight of oleaginous materials, at least part of the steroid being dissolved in the polyethylene glycol, and the foregoing solution of steroid in polyethylene glycol being dispersed in the oleaginous material.

3,892,857

STEROID FORMULATION

Louis Thomas Difazio, Somerville, and Matthew Anthony Augustine, Allentown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 24, 1972, Ser. No. 309,295
Int. Cl.[2] A61K *31/58*
U.S. Cl. 424—241 8 Claims

1. A cream composition for topical application comprising from about 0.05 part to about 2.0 parts by weight of 21-chloro-9α-fluoro-Δ^4-pregnene-11β,16α,17α-triol-3,2-,dione 16,17-acetonide, from about 300 to about 700 parts by weight of propylene glycol, from about 70 to about 440 parts by weight of water, about 33 parts by weight of polyoxyalkylene derivative of hexitol anhydride partial long chain fatty acid ester, and from about 180 to about 260 parts by weight of monoglyceride of fatty acid of from 16 to 18 carbon atoms, fatty alcohol of from 12 to 16 carbon atoms, or fatty acid ester of alcohol having from 3 to about 16 carbon atoms, the lower amounts of the steroid being employed with the lower amounts of propylene glycol, and the higher amounts of the steroid being employed with the higher amounts of propylene glycol, whereby from about 30 to about 75 % by weight of the steroid is in solution in the propylene glycol.

3,892,858

METHOD FOR LOWERING URIC ACID LEVELS USING 7-ALKYLSUFONYL SUBSTITUTED BENZOTHIADIAZINE-1,1-DIOXIDES

Frederick C. Novello, Berwyn, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 265,132, June 22, 1972, Pat. No. 3,816,625. This application Apr. 1, 1974, Ser. No. 456,947
Int. Cl. A16k *27/00*
U.S. Cl. 424—246 16 Claims

1. A method which comprises orally administering to a mammal having an elevated blood uric acid level a dose sufficient to lower the blood uric acid level to normal for that species a 3-R^1-6-X-7-RO_2S-1,2,4-benzothiadiazine-1,1-dioxide or a pharmacologically acceptable salt thereof wherein X represents C_{1-3} alkyl, chloro and trifluoromethyl; R^1 represents hydrogen, lower alkyl, halo-lower alkyl, phenyl-lower

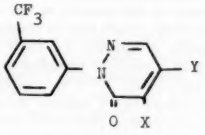
alkyl, carboxy, $—CO_2$ lower alkyl and $-CONH_2$; and R represents lower alkyl and phenyl lower alkyl.

3,892,859
1-(M-TRIFLUOROMETHYLPHENYL)-5-HALOPYRIDAZONES-(6) AS SLEEP INDUCERS

Jerome Linder, Westfield, N.J., assignor to Sandoz-Wander, Inc., E. Hanover, N.J.

Division of Ser. No. 306,440, Nov. 14, 1972, abandoned. This application June 6, 1974, Ser. No. 476,921
Int. Cl. H61k *27/00*
U.S. Cl. 424—250 **12 Claims**

1. A method for inducing sleep which comprises orally or parenterally administering to a mammal in need of said treatment a sleep inducing effective amount of a compound of the formula:



where

Y is —NHOH, $—NHOR_2$ or

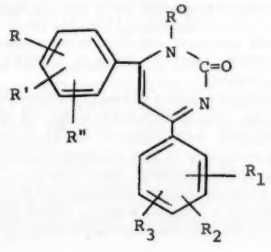
R_1 and R_2 are each alkyl of 1 to 4 carbon atoms and X is halo having an atomic weight of about 35 to 80.

3,892,860
4,6-DIARYL-PYRIMIDIN-2(1H)-ONES AS SLEEP-INDUCERS

Goetz E. Hardtmann, Florham Park, and Faizulla G. Kathawala, West Orange, both of N.J., assignors to Sandoz-Wander, Inc., E. Hanover, N.J.

Division of Ser. No. 172,583, Aug. 17, 1971, Pat. No. 3,772,272, which is a continuation-in-part of Ser. No. 37,341, May 14, 1970, abandoned, which is a continuation-in-part of Ser. No. 878,572, Nov. 20, 1969, abandoned. This application Aug. 3, 1973, Ser. No. 385,402
Int. Cl. C07d *51/38*
U.S. Cl. 424—251 **8 Claims**

1. The method of inducing sleep in a mammal comprising administering to a mammal a sleep-inducing effective amount of a compound of the formula:



wherein

R^o is alkyl of 1 to 5 carbon atoms,

each of R and R'' is independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms,

R' is hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, nitro or trifluoromethyl,

each of R_1 and R_3 is independently hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms, and

R_2 is hydrogen, fluoro, chloro, bromo, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, nitro or trifluoromethyl, provided that no more than one of R, R' and R'' and no more than one of R_1, R_2 and R_3 is a branched chain substituent.

3,892,861
SYNERGISTIC FUNGICIDE OF 2-(METHOXYCARBAMOYL)-BENZIMIDAZOLE AND AN N-SUBSTITUTED PHTHALIMIDE

Ernst-Heinrich Pommer, Limburgerhof; Guenter Scheuerer, Ludwigshafen; Gerhard Bolz, Frankenthal, and Dietrich Mangold, Neckargemuend, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed May 29, 1973, Ser. No. 364,858
Claims priority, application Germany, June 2, 1972, 2226945
Int. Cl. A01n *9/22*
U.S. Cl. 424—273 **5 Claims**

1. A fungicidal composition comprising a mixture of

a. 2-(methoxycarbamoyl)-benzimidazole and

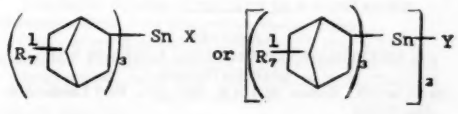
b. an N-substituted phthalimide selected from the group consisting of N-trichloromethylthiotetrahydrophthalimide, N-trichloromethylthiophthalimide and N-(1,1,2,2-tetrachloroethylthio)-tetrahydrophthalimide in a weight ratio of *a:b* of 1:1 to 1:4.

3,892,862
COMPOSITION AND METHOD FOR COMBATTING FUNGI AND MITES CONTAINING TRIORGANOTIN COMPOUNDS

Melvin H. Gitlitz, Edison, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.

Division of Ser. No. 316,045, Dec. 18, 1972, Pat. No. 3,781,316. This application July 16, 1973, Ser. No. 379,745
Int. Cl. A01n *9/00*
U.S. Cl. 424—288 **11 Claims**

1. A non-phytotoxic composition for combating fungi and mites, said composition comprising an inert liquid or inert solid carrier and a fungicidally or miticidally effective amount of a tri-2-norbornyltin compound represented by the general formula



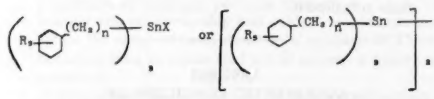
wherein each R^1 is individually selected from the group consisting of hydrogen linear alkyl containing between 1 and 8 carbons and branched alkyl containing between 1 and 8 carbons, X is selected from the group consisting of chlorine, bromine, fluorine, hydroxyl, carboxylate, phenoxy, alkoxy ($—OR^2$) and mercaptide ($—SR^2$), wherein R^2 is alkyl containing between 1 and 12 carbons, inclusive and Y is selected from the group consisting of oxygen, sulfur and sulfate.

3,892,863
METHOD FOR COMBATING FUNGI AND MITES USING TRIS (CYCLOHEXYLALKYL) TIN COMPOUNDS

Melvin H. Gitlitz, and Bernard G. Kushlefsky, both of Edison, N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

Division of Ser. No. 295,137, Oct. 5, 1972, Pat. No. 3,790,611.
This application July 16, 1973, Ser. No. 379,744
Int. Cl. A01n 9/00
U.S. Cl. 424—288 6 Claims

1. A method for controlling organisms selected from the group consisting of fungi and mites which comprises contacting said organisms with a fungicidally and miticidally effective amount of a compound of the formula



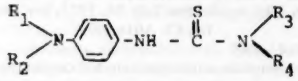
wherein each R is individually selected from the group consisting of hydrogen linear alkyl containing between 1 and 8 carbons and branched alkyl containing between 1 and 8 carbons, X is selected from the group consisting of chlorine, bromine, fluorine, hydroxyl, carboxylate (—OOCR'), phenoxy, alkoxy (—OR'), and mercaptide (—SR') wherein R' is alkyl containing between 1 and 12 carbons, inclusive, Y is selected from the group consisting of oxygen, sulfur and sulfate and *n* is an integer between 1 and 5, inclusive.

3,892,864
METHOD FOR COMBATTING RODENTS AND RODENTICIDAL COMPOSITIONS

Hiroshi Yamamoto, Tokyo; Shoichi Kato, Ageo; Koji Ohgushi, and Iwao Tokumitsu, both of Fukuoka, all of Japan, assignors to Nippon Kayaku Co., Ltd., Japan

Filed Sept. 5, 1972, Ser. No. 286,058
Claims priority, application Japan, Sept. 13, 1971, 46-70390
Int. Cl.[2] A01N 9/12, 9/20
U.S. Cl. 424—322 5 Claims

1. A method for combatting rodents comprising the step of making accessible to rodents a feed bait containing a rodenticidally effective amount of a compound of the formula



wherein R_1 is hydrogen or alkyl of 1 to 5 carbons, R_2 is alkyl of 1 to 5 carbons, R_3 is hydrogen or alkyl of 1 to 2 carbons, and R_4 is hydrogen or alkyl of 1 to 12 carbons, or a hydrochloric acid salt thereof.

3,892,865
METHOD OF CONTROLLING LIPIDS IN THE BLOODSTREAM

Dan Christian Roehm, 808 N.E. 20th Ave., Fort Lauderdale, Fla. 33304

Filed Feb. 9, 1972, Ser. No. 224,964
Int. Cl. H61k 27/00
U.S. Cl. 424—325 12 Claims

1. A method of lowering the serum lipids of animals comprising administering an effective lipid lowering amount of a composition to an animal host in need of said lipid lowering and in such a fasting state that the animal has not had a substantial food intake within 2 hours before or 1 hour after the administration of the composition, whereby the lipid content of the blood drops below the preadministration content, said substantial food intake being at least the equivalent of 400 calories and 2 ounces of fat and said composition consisting essentially of diethanolamine or the pharmaceutically acceptable nontoxic salts thereof.

3,892,866
PROCESS FOR THE PREPARATION OF FEED FOR CULTIVATING MACRURA

Tsunetoshi Kanemitsu, Tokyo, Japan, assignor to Taiyo Fishery Co., Ltd., Tokyo, Japan

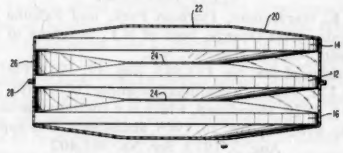
Continuation-in-part of Ser. No. 82,132, Oct. 19, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 331,585
Claims priority, application Japan, Oct. 20, 1969, 44-83243
Int. Cl. A23k 1/10, 1/18
U.S. Cl. 426—72 7 Claims

1. A process for preparing a dry solid feed for cultivating macrura which comprises shrimp, prawn and lobster which hides at the bottom of the nursery in the sand thereof and which eats food slowly, which feed is resistant to collapse in water and is capable of keeping the water soluble nutrients after feeding, which comprises kneading fresh raw meat of fish, shrimp, or clams with 1–3% by weight of salt selected from the group consisting of sodium chloride, magnesium sulfate, sodium phosphate, potassium phosphate, calcium phosphate and calcium lactate to give an adhesive paste, adding 50–150 parts by weight of the paste to 100 parts by weight of a compound feed powder containing fish meal, soybean meal, wheat flour, yeast and minerals, fully kneading the mixture, shaping the kneaded mixture into adequate size pellets and thereafter heating the shaped materials to dryness.

3,892,867
READILY SEPARABLE INSTANT BEVERAGE CHARGE

Marten Leonard Schoonman, 906 N. Elam Ave., Greensboro, N.C. 27408

Filed Feb. 7, 1974, Ser. No. 440,611
Int. Cl. A23f 1/08, 3/00
U.S. Cl. 426—93 2 Claims



1. In an "instant" water soluble, comestible beverage charge of the type wherein said charge is added to a measured body of water to form a beverage, and wherein said beverage charge comprises measured portions of separate, individual comestibles including a first comestible selected from the group consisting of powdered coffee and tea and at least one other, second comestible selected from the group consisting of powdered milk and sugar, the improvement wherein:

each comestible takes the form of a pressed powdered disc-like wafer,

and said charge consisting of said first comestible wafer and at least one second comestible wafer, all of said wafers being stacked, with adjacent wafers being adhesively fixed to each other in face abutting contact and forming a unitary solid, detachable wafer stack;

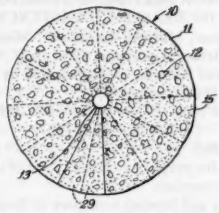
whereby, the content of the beverage may be readily varied by separating a selected wafer or wafers from the stack prior to adding the stacked wafer charge to the water.

3,892,868

PIZZA PIE AND METHOD OF FORMING THE SAME

Josef F. Klingler, 1335 Gregory, Wilmette, Ill. 60091

Filed Apr. 27, 1973, Ser. No. 355,056
Int. Cl. A21d *13/00*; A23g *3/00*
U.S. Cl. 426—94 10 Claims



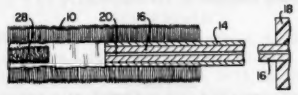
1. A pizza pie having a dough portion and a topping, said dough portion having a central hole defined by an annular inner upwardly extending edge crust portion, an outer circumferential upwardly extending edge crust portion, and a compacted mid-portion extending between said edge portions.

3,892,869

END PLUG CLOSURES FOR SHIRRED CASING STICKS AND METHODS FOR MAKING THEM

Arthur L. Sheridan, Woodridge, and Walter V. Marbach, Palos Heights, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,367
Int. Cl. A22c *13/00*
U.S. Cl. 426—138 5 Claims



1. A hollow shirred stick of tubular casing having an open end and a closed end, said closed end comprising a plug of compressed casing of which a first portion is secured to at least a portion of the fore end surface of the shirred stick with the remainder generally conforming to the bore of the shirred stick and extending within said bore so as to form an annular space between the entended portion of said plug and the internal wall of the shirred stick wherein the compressed casing of the plug is casing deshirred from the fore end of the shirred stick thereby resulting in said plug being a free floating plug integral with said shirred stick.

3,892,870

ARTIFICIAL FRUIT AND PROCESS THEREFOR

Francis William Wood, Bedford, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,275
Int. Cl. A23l *1/04*
U.S. Cl. 426—573 8 Claims

1. A process for the production of artificial fruit of heterogeneous eating texture consisting essentially of the steps of

i. preparing a fruit-flavored solution of a first gelling agent selected from the class consisting of alginate and low methoxy pectate;

ii. dispersing fruit-flavored particles having a diameter of from about 0.5 mm to about 3 mm of a gel based on a second gelling agent selected from the class consisting of agar, carageenan, gelatin, furcellaran and starch in the solution; and

iii. gelling the solution round the particles by action of calcium ions, the volume ratio of the particles to the solution being from about 1:1 to about 3:1.

3,892,871

HIGH FRUCTOSE CORN SYRUP JELLIES AND METHOD FOR MANUFACTURE THEREOF

Ned Cooper, 4 Naramore Dr., Batavia, N.Y. 14020

Filed Feb. 19, 1974, Ser. No. 443,855
Int. Cl. A23l *1/06*
U.S. Cl. 426—573 14 Claims

1. An edible flavored jelly comprising 5[illegible] to 67% of corn syrup solids, of which at least 15% is from high fructose corn syrup, a flavoring material, 0.2 to 5% of a gelling agent, an acidifying agent in sufficient quantity to make the pH of the jelly in the range of 1.5 to 3.5, and water.

3,892,872

EDIBLE COLOURING MATERIALS

Arthur Ernest Billington, Watford, England, assignor to Beecham Group Limited, England

Filed Aug. 13, 1973, Ser. No. 387,749
Claims priority, application United Kingdom, Aug. 19, 1972, 38761/72; Oct. 5, 1972, 45922/72
Int. Cl. A23l *1/26*
U.S. Cl. 426—250 9 Claims

1. An food composition comprising 8-amino-2-(azo-benzene-4-sulphonic acid)-1-naphthol-3 6-disulphonic acid or an edible salt thereof together with foodstuff.

3,892,873

EMULSIFIED OIL DRESSING

Eugene P. Kolen, Evanston, and Olga C. Golosinec, Park Ridge, both of Ill., assignors to Kraftco Corporation, Glenview, Ill.

Filed Nov. 19, 1973, Ser. No. 417,132
Int. Cl. A23l *1/24*
U.S. Cl. 426—602 8 Claims

1. An emulsified oil dressing having a pH in the range of from about 3 to about 4.5 comprising water, oil, flavoring materials and an emulsifying agent, said emulsifying agent consisting essentially of serum protein obtained from milk, said oil being present at a level of from about 50 to about 80 percent by weight, said serum protein being at least about 70 percent by weight denatured protein when said oil is present at a level of from about 50 to about 70 percent by weight and said serum protein being less than about 20 percent by weight denatured protein when said oil is present at a level of from about 70 to about 80 percent by weight, said serum protein being present at a level of from about 0.5 percent to about 5.0 percent by weight of said dressing.

3,892,874

METHOD OF MANUFACTURING SEASONED INSTANT COOKING NOODLES PACKED IN A CONTAINER

Momofuku Ando, 7-34 Masumicho, Osaka, Japan

Continuation-in-part of Ser. No. 140,253, May 4, 1971, abandoned. This application Oct. 10, 1973, Ser. No. 405,061
Claims priority, application Japan, Aug. 10, 1970, 45-69928
Int. Cl. A23l *1/16*
U.S. Cl. 426—303 3 Claims

1. A method of converting raw noodles into precooked noodles flavored with a seasoning agent, comprising the steps of successively:

gelatinizing said raw noodles by boiling;

immediately subjecting the boiled noodles to a spray of a liquid containing a seasoning agent, said liquid having a temperature below about 5℃;

squeezing excess liquid containing seasoning agent from said noodles;

sprinkling edible oil upon said noodles;
immersing said noodles in a hot edible oil at an elevated temperature substantially above the boiling point of water for partially dehydrating same;
packing said noodles substantially at said elevated temperature in a container;
sealing said container; and then
cooling said container and its contents.

3,892,875
PROCESS FOR THE PRESERVATION OF SEA URCHIN GONADS BY QUICK FREEZING

Alberto Sfeir, Santiago, Chile, assignor to Corporacion de Fomento de la Producion, Santiago, Chile

Continuation-in-part of Ser. No. 322,726, Jan. 11, 1973, abandoned. This application June 17, 1974, Ser. No. 480,240
Claims priority, application Chile, Jan. 14, 1972, 2572
Int. Cl. A23b *1/02*
U.S. Cl. 426—303 **2 Claims**

1. A method for quick-freezing sea urchin gonads (*Loxechinus Albus*) for preservation purposes, comprising:
resting the washed gonads in an aqueous solution of 2–4% by weight sodium chloride for a period of approximately 30 minutes;
immersing said gonads into an aqueous solution of 8–12% by weight sodium chloride, 0.1 to 0.5% by weight sodium phosphate and 0.05 to 0.2% by weight citric acid, for a period of approximately 15–20 minutes:
and then quick-freezing said gonads at a speed not under 2.5 centimeters an hour.

3,892,876
PROCESS OF PREPARING FREEZE-DRIED GELATIN

Trevor Maurice Norwood Hobday, High Wycombe, and Graham William Jordan, Machen, both of England, assignors to P. Leiner & Sons (Wales) Limited and Ranks Hovis McDougall Limited, both of London, England

Filed Nov. 27, 1972, Ser. No. 309,783
Claims priority, application United Kingdom, Nov. 30, 1971, 55541/71
Int. Cl. A23j *1/10*
U.S. Cl. 426—576 **10 Claims**

warm GELATIN SOL direct from manufacture
spray on to a continuously rotating refrigerated drum
FROZEN GELATIN SOL
Continuously remove from rotating drum
freeze dry
reduce particle size
GELATIN PRODUCT

1. A method of treating gelatin to improve its solubility in cold water whilst substantially retaining its gelling property, the method comprising the steps of spraying an aqueous gelatin sol having a gelatin concentration of at least 10 percent w/w on to a refrigerated surface whilst maintaining relative movement between the spray of aqueous gelatin sol and the refrigerated surface so that the particles of aqueous gelatin sol which comprise the spray freeze directly to the refrigerated surface, removing the frozen aqeuous gelatin sol from the refrigerated surface after a single passage of the spray over the refrigerated surface, melting of the frozen aqueous gelatin sol being prevented while the frozen aqueous gelatin sol is being removed from the refrigerated surface, and freeze-drying the frozen aqueous gelatin sol to recover gelatin therefrom before any melting of the frozen aqueous gelatin sol is permitted.

3,892,877
PROCESS FOR PREPARING TOMATO JUICE OF INCREASED CONSISTENCY

Joseph R. Wagner, Moraga; Jackson C. Miers, Pleasant Hill, and Robert Becker, Lafayette, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 17, 1972, Ser. No. 235,779
Int. Cl. A23l *1/02*
U.S. Cl. 426—365 **11 Claims**

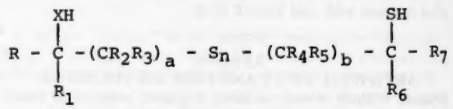
1. A process for preparing tomato juice of increased consistency, which comprises
a. macerating and heating tomatoes at their natural pH, the maceration being with force sufficient to break up the tomatoes into a pulpy mass but insufficient to cause substantial damage to individual fruit cells, the heating being at a temperature and for a time sufficient to inactivate the enzymes, but insufficient to damage the tomatoes,
b. mixing the resulting tomato macerate with an amount of non-toxic acid sufficient to provide a pH less than 3.5, said mixing being sufficient to thoroughly distribute the acid within the macerate but insufficient to cause mechanical shearing of the individual fruit cells, whereby to avoid any substantial increase in consistency,
c. extracting the juice from the macerate, said extraction being carried out under conditions which minimize mechanical shearing of individual fruit cells, whereby to avoid any substantial increase in consistency, and
d. homogenizing the juice by applying vigorous and repeated shearing forces to the juice, whereby to cause extensive physical damage to the fruit cells in the juice and thereby increase its consistency.

3,892,878
FLAVORING WITH SULFUR CONTAINING COMPOUNDS

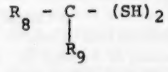
Richard A. Wilson, Westfield, and Christopher Giacino, Califon, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,304
Int. Cl. A23l *1/26*
U.S. Cl. 426—534 **14 Claims**

1. A process for altering the organoleptic properties of a foodstuff which comprises adding thereto an effective amount of a sulfur-containing compound of the formula



or



wherein X is oxygen or sulfur, each of R through R_9 is the same or different and each is hydrogen or lower alkyl of 1–4 carbon atoms, and at least one of R_4 or R_5 is such lower alkyl; and when n is 0, then b is 0 and a is an integer of from 0 to 7; and when n is 1, a and b are the same and each represents an integer of 1.

3,892,879
USE OF OXAZOLINE FLAVORING AGENTS AND FLAVOR EXTENDERS

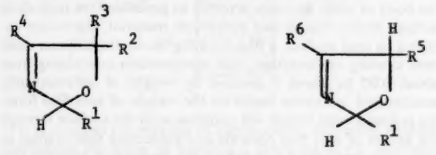
Donald S. Hetzel, New London, and Anibal Torres, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 150,768, June 7, 1971, Pat. No. 3,769,293, which is a continuation-in-part of Ser. No. 34,876, May 5, 1970, abandoned. This application June 29, 1973, Ser. No. 374,931

Int. Cl. A23l *1/26*

U.S. Cl. 426—536 **3 Claims**

1. A method of flavoring a food base carrying a flavor selected from the group consisting of peanut, cocoa, chocolate, caramel, mint, butter, rum and fruit, said method comprising adding to said base a compound selected from the group consisting of those having the formulae:



wherein:

R^1, R^2, R^3 and R^4 are each alkyl groups containing up to 6 carbon atoms; and

R^5 and R^6 are each alkyl groups containing from 2 to 6 carbon atoms in an amount sufficient to enhance the flavor and aroma of said food base.

3,892,880
METHOD FOR THE MANUFACTURE OF CRYSTALLINE, FLOWABLE, STABLE FAT POWDERS OR MIXTURES OF SUCH FAT POWDERS WITH OTHER POWDERY MATERIALS

Erhard Grolitsch, Strauchergasse 23, Graz, Austria

Continuation-in-part of Ser. No. 851,190, Aug. 19, 1969, abandoned. This application Aug. 10, 1972, Ser. No. 279,740

Int. Cl. A23d *5/00*

U.S. Cl. 426—541 **12 Claims**

1. A method for continuously converting fat that is completely solid at a temperature of approximately 20°C., into a crystalline, flowable, stable powder, comprising the steps of:

1. heating the fat to a first temperature above, but not in excess of approximately 15°C. above, the clear melting point of the fat to melt the fat and then mixing same to form a homogeneous molten fat composition;

2. thereafter chilling the homogeneous molten fat composition to a second temperature which lies in the lower third of the temperature range between the congeal point and the clear melting point of the homogeneous fat composition, the chilling being carried out at a rate effective to initiate the formation of a high concentration of high melting point β-fat crystal nuclei and to minimize the formation of relatively low melting point α and β'-fat crystal nuclei in the fat composition but without cooling the fat composition below the congeal temperature of the fat composition, and then maintaining the fat composition at the second temperature for a time period of from 2 to 30 minutes to complete the development of a high number of relatively high melting β-fat crystal nuclei in the fat composition;

3. thereafter heating the fat composition up to a third temperature at which its viscosity is such that the fat composition is suitable for atomizing and spraying and to substantially dissolve any residual α β'-fat crystal nuclei in the fat composition and to avoid destruction of the β-fat crystal nuclei, the third temperature being no higher than approximately 10 percent below the clear melting point of the fat composition;

4. then spraying the fat composition substantially free of α and β'-fat crystal nuclei and containing a high concentration of β'-fat crystal nuclei in the liquid phase into a crystallization chamber and therein contacting the sprayed fat composition with cool dry air by circulating through the crystallization chamber a stream of dehumidified air at a temperature of between about −15° to −30°C. to crystallize fat particles, the dew point of the stream of dehumidified air being below the lowest temperature in the crystallization chamber, whereby there is formed a flowable powder of crystalline fat particles of a small particle size and containing primarily the β crystalline form of fat;

5. discharging the flowable fat powder from the crystallization chamber; and

6. then ripening the fat powder in a ripening chamber in a dehumidified atmosphere at a fourth temperature of between about 0°C. to +10°C. for a ripening period of from approximately 0.5 to approximately 10 minutes, the dew point of the dehumidified atmosphere being below the lowest temperature in the ripening chamber.

3,892,881
NON-NEWTONIAN NUTRITIVE COMPOSITIONS

Kenneth J. Lissant, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 784,905, Dec. 18, 1968, abandoned. This application Nov. 23, 1971, Ser. No. 201,562

Int. Cl. A23l *1/24;* **A23d** *5/00*

U.S. Cl. 426—602 **14 Claims**

1. A stable, non-settling nutritive high internal phase ratio emulsion characterized by the presence of nutritive agent therein and by the absence of thickening agent therefrom,

said high internal phase ratio emulsion having the characteristics of a solid when at rest and the characteristics of a liquid when a force is exerted on it with a decrease in the effective viscosity with shear rate, said emulsion consisting essentially of (1) food grade emulsifying agent, (2) nutritive acceptable emulsifiable oil, and (3) aqueous nutritive acceptable non-oil,

said high internal phase ratio emulsion being selected from the group consisting of (1) an oil-in-aqueous non-oil emulsion and (2) an aqueous non-oil-in-oil emulsion,

the internal phase of said emulsion being present in an amount of at least 80 percent by volume of the emulsion.

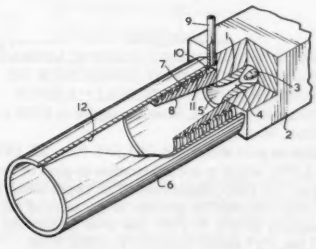
3,892,882
PROCESS FOR PLASMA FLAME SPRAY COATING IN A SUB-ATMOSPHERIC PRESSURE ENVIRONMENT

Christopher John Scott Guest, and Keith Graham Ford, both of Swindon, England, assignors to Union Carbide Corporation, New York, N.Y.

Filed May 25, 1973, Ser. No. 364,171

Int. Cl. B05b *5/06*

U.S. Cl. 427—34 **2 Claims**



1. A method for producing plasma sprayed coatings comprising

maintaining an arc between a first and second electrode;
passing a gas into said arc to produce a hot gas effluent;
introducing a coating powder into said hot gas effluent;
passing said coating powder entrained hot gas effluent through an arc constricting nozzle;
surrounding said coating powder entrained hot gas effluent by a vortical flow of gas moving in the same direction as said hot gas effluent to provide a zone of sub-atmospheric pressure from said nozzle substantially to a substrate to be coated;
maintaining said coating powder entrained hot gas effluent within said zone of sub-atmospheric pressure until it strikes said substrate.

3,892,883
PROCESS FOR PLASMA SPRAYING FIBER-REINFORCED THERMOSETTING RESIN LAMINATES

Gérard Leclercq, St-Medard en Jalles, France, assignor to Societe Europeene de Propulsion, Puteaux, France

Filed Jan. 19, 1973, Ser. No. 325,183
Int. Cl. C23c *7/00*
U.S. Cl. 117—427/34 **10 Claims**

1. A process for providing a fiber-reinforced thermosetting resin laminate with a protective coating, which process comprises cleaning the surface of the resin laminate to be coated with a solvent and then blasting the surface with an abrasive to remove foreign bodies, plasma spraying a layer of a mixture containing 75% copper and 25% glass on the cleaned and blasted surface, cooling the said copper/glass layer, plasma spraying a layer of nickel aluminide on the copper/glass layer, cooling the said nickel aluminide layer, and plasma spraying a layer of chromium carbide or tungsten carbide on the nickel aluminide layer.

3,892,884
METHOD FOR THE PREPARATION OF PROTECTIVE COATING

Peter Garth Garratt, Wallisellen, and Juerg Hoigne, Zurich, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Continuation-in-part of Ser. No. 41,048, May 27, 1970, abandoned. This application Jan. 25, 1972, Ser. No. 220,684
Claims priority, application Switzerland, May 30, 1969, 8218/69
Int. Cl. B44d *1/50;* **C08f** *3/32*
U.S. Cl. 427—36 **16 Claims**

1. A method which comprises coating a substrate with a mixture consisting of at least one member selected from the group consisting of chlorinated polyethylene, chlorinated polypropylene, chlorinated polybutylene and chlorinated rubber together with at least one member selected from the group consisting of ethyl acrylate, butyl acrylate, butyl methacrylate and ethyl hexyl acrylate and exposing the coating to a sufficient amount of ionizing radiation to harden said mixture and form a protective coating on said substrate.

3,892,885
PROCESS FOR TREATING POLYMERIC SURFACES TO PROVIDE INCREASED ADHERENCE TO SUBSEQUENTLY APPLIED COATINGS

Robert A. Bragole, Danvers, Mass., assignor to USM Corporation, Boston, Mass.

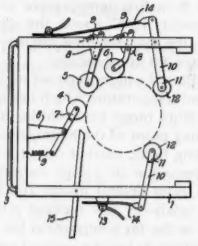
Continuation-in-part of Ser. No. 201,541, Nov. 23, 1971, Pat. No. 3,764,370, which is a continuation-in-part of Ser. No. 887,348, Dec. 22, 1969, abandoned. This application Sept. 21, 1973, Ser. No. 399,560The portion of the term of this patent subsequent to Oct. 9, 1990, has been disclaimed.
Int. Cl.[2] B44D *1/50, 5/12;* **C08F** *3/00*
U.S. Cl. 427—54 **10 Claims**

1. The process of providing a distinct resinous coating strongly adherent to the surface of a body of a polymer resin having at least some hydrogen on a carbon chain in a repeating unit in the polymeric chain and having a critical surface tension of wetting of not more than 35 dynes per centimeter, said surfaces being selected from the group consisting of surfaces of bodies of resinous polyvinyl fluoride, polyvinylidene fluoride, polyolefins, copolymers of ethylene or propylene with vinyl acetate or ethyl acrylate, copolymers of ethylene and propylene containing a small proportion of a non-conjugated diene and molded surfaces of bodies of resins from the group consisting of polyacetal resins, polyamide resins, polycaprolactam resins, polyurethane resins, and ionomer resins, said process comprising the steps of providing a photosensitizer having a triplet state energy of at least about 62 K cal/-mole at the surface to be coated of said polymeric material, irradiating said surface with ultraviolet light in the range of about 2,000 A to about 3,500 A to the extent of at least about 1,000 watt seconds to form a cross-linked surface integral with the body of resin and concurrently to generate free radicals in surface molecules of said polymeric material, thereafter applying to said surface a film forming synthetic polymer resin base coating composition, said composition containing from about 0.05 to about 5 percent by weight of polymerizable unsaturated monomer based on the weight of said film forming polymer resin which will combine with the surface through the action of said free radicals and subjecting said coating to heat after application to improve the interaction between said free radicals, the polymeric resin of the coating and said polymerizable unsaturated monomer material in the applied coating to unite the entire coating to said surface.

3,892,886
TREATMENT OF ELECTRODES

Dieter Schmidt; Clive Graham Lorkin, and Josef Schiffarth, all of Borken, Germany, assignors to Foseco International Limited, Birmingham, England

Filed July 26, 1973, Ser. No. 382,873
Claims priority, application United Kingdom, Aug. 15, 1972, 38102/72
Int. Cl. B44d *1/20*
U.S. Cl. 427—59 **7 Claims**



1. In a method of treating the surface of a rotationally symmetric carbon article the steps of: engaging the surface of the article with the surfaces of a plurality of rollers which are disposed with their axes parallel to the axis of the article; effecting relative rotation between the articles and the rollers such that the rollers roll around the circumference of the article; and effecting a protective treatment on the article surface during rotation.

3,892,887

PROCESS FOR MAKING AN ELECTROSTATIC RECORDING MEDIUM

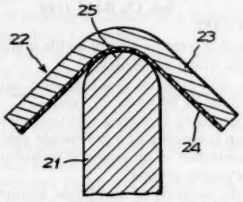
Kazuo Shibata, and Takao Matsushita, both of Hyogo, Japan, assignors to Kanzaki Paper Mfg. Co. Ltd., Tokyo, Japan

Filed Mar. 16, 1973, Ser. No. 342,266

Claims priority, application Japan, Mar. 18, 1972, 47/27852

Int. Cl. H01b *1/00*

U.S. Cl. 427—121 6 Claims



1. A process for making an electrostatic recording medium comprising the steps of forming a dried dielectric recording layer on a surface of an electrically conductive substrate selected from the group consisting of paper, plastic film and synthetic paper, said dielectric recording layer being essentially formed of an insulating resin material, and scraping the exposed surface of said dried dielectric recording layer by drawing same transversely across an elongated scraping means with contact area having a relatively narrow contact length within the range of about 0.1 mm to 100 mm, said contact area having a Rockwell hardness within the range of about M 70 to M 120 and a coefficient of friction against clean steel within the range of about 0.1 to 0.7.

3,892,888

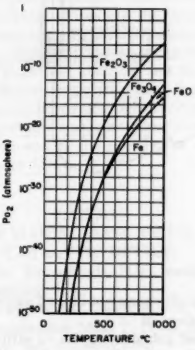
METHOD OF MAKING A MAGNETIC RECORDING AND STORAGE DEVICE

Sami A. Halaby, Raleigh, N.C.; Neal S. Kenny, Horseheads, and James A. Murphy, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 9, 1971, Ser. No. 151,388

Int. Cl. H01f *10/00*

U.S. Cl. 117—236 24 Claims



1. A method of making an iron oxide magnetic recording and storage device comprising the steps of

providing an inorganic and non-magnetic support member,

heating said support member to a temperature of at least 300°C,

exposing a surface of said heated support member to the vapors of an iron compound, said iron compound vapors containing substantially no metal other than iron,

maintaining said heated support member in a reducing atmosphere while exposing it to said iron compound vapors, whereby a film of iron will be formed on said support member, and thereafter

maintaining said support member and iron film combination at a temperature of at least 300°C in an oxidation-reduction atmosphere whereby said iron film is converted to a film of magnetite.

3,892,889

PROCESS FOR STABILIZING MOLDINGS OF HIGH MOLECULAR WEIGHT THERMO-PLASTIC POLYCARBONATES

Wolfgang Cohnen, and Gunter Peilstocker, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 28, 1973, Ser. No. 336,657

Claims priority, application Germany, Mar. 10, 1972, 2211641

Int. Cl. C08g *51/58, 51/60*

U.S. Cl. 427—160 13 Claims

1. In the process for the production of moldings of high molecular weight thermoplastic polycarbonates of bivalent phenols having dispersed to a depth of from about 5 to about 30 μ from the surface, from about 2 to about 30 grams per square meter of surface of an ultraviolet absorber, the surface being sealed, wherein 150 to 300 cc/(m^2 of molding surface) of a stabilizer solution are applied to the molding surface and the molding surface thereafter dried, the improvement comprising employing as the stabilizer solution a solution comprising

a. a liquid mixture comprising 10 – 80 parts by weight of an aliphatic C_1 –C_3 halogenohydrocarbon; 20 – 80 parts by weight of a lower aliphatic C_1 – C_4 alcohol and 0 – 25 parts by weight of water, and

b. 2 – 20 parts by weight based on the weight of the liquid mixture, of an ultraviolet absorber for polycarbonates selected from the group consisting of benzophenone derivatives, benzotriazole derivatives, crotonic acid esters, acrylic acid esters and mixtures of these ultraviolet absorbers.

3,892,890

PROCESS FOR FORMING CARBON COATINGS

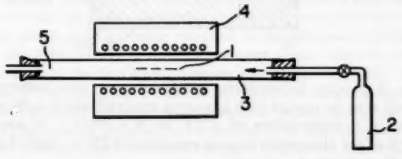
Kiyoshi Watanabe; Akira Misumi; Takayoshi Onodera, and Kazuo Sunahara, all of Mobara, Japan, assignors to Hitachi, Ltd., Japan

Filed May 9, 1973, Ser. No. 358,647

Claims priority, application Japan, May 12, 1972, 47-46394; May 12, 1972, 47-46395; May 12, 1972, 47-46396

Int. Cl. C01b *31/00*

U.S. Cl. 427—249 70 Claims



1. A process for forming a carbon coating on an iron surface of an article to be coated, which process comprises the steps of first forming on the iron surface of said article a nickel-phosphorus alloy layer having an amount of 4 - 12 percent by weight of phosphorus, and of then heating the nickel-phosphorus alloy layer-coated article in a non-combustible gas mixture containing a thermally decomposable hydrocarbon

gas, thereby effecting a thermal decomposition reaction of said gas at a temperature below 700°C to deposit carbon contained in said gas on the surface of said nickel-phosphorus alloy layer-coated article to form the carbon coating thereon, said nickel-phosphorus alloy layer effecting catalytic action to deposit carbon with a nickel-phosphorus compound of said alloy layer, so that said carbon coating is firmly bonded to said surface at said temperature.

3,892,891

PROVISION OF REPRODUCIBLE THIN LAYERS OF SILICON DIOXIDE

Alvin Malcolm Goodman, Princeton, N.J., and James Miklos Breece, Morrisville, Pa., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 51,248, June 30, 1970, abandoned. This application May 15, 1972, Ser. No. 253,416

Int. Cl. C23c *11/08*

U.S. Cl. 427—255 **6 Claims**

1. A method of reproducibly providing, in separately performed procedures, a thin layer of silicon dioxide of a preselected thickness less than in the order of 100 A on silicon bodies, comprising:

cleaning a surface of each of said bodies,

thermally growing on said surfaces a first layer of silicon dioxide having a thickness greater than said preselected thickness,

removing said first layer without exposure of said surfaces to an oxidizing atmosphere to provide a similarly clean surface on all of said bodies,

after the conclusion of said removing step and at the same pre-set time within 3 minutes of any exposure of said bodies to an oxidizing atmosphere provided by normal room conditions, preheating said bodies at a temperature between 100° and 200°C in a substantially identical atmosphere of preselected dew point for a period of time sufficient to provide substantially identical conditions of temperature and wetness of the surfaces of said bodies from procedure to procedure, and

thereafter, thermally oxidizing said surfaces at a temperature substantially greater than that used in said pre-heating step to provide a silicon dioxide layer thereon of said pre-selected thickness.

3,892,892

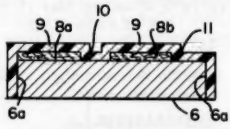
MASKING PROCESS WITH COLD SINK

Peter H. Hofer, Berkeley Heights, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 1, 1973, Ser. No. 356,207

Int. Cl. B44d *1/52*

U.S. Cl. 427—272 **21 Claims**



1. A process for masking a defined area on a substrate which is to be coated with a coating material which suffers a loss, at a temperature of $< 25°$ to $\geq -196°$ C., of about 125% of the elongation value it possesses at 25° C., and which can be embrittled at low temperatures

which comprises

masking said defined area with masking means,

applying said coating material to said substrate so as to coat the masked and unmasked areas of said substrate,

cooling that portion of the coating material which covers said masking means to a temperature and for a period of time as is sufficient to embrittle said portions of said coating material,

tearing the embrittled coating material along the edges of said defined area, and, or while

removing said masking means from said substrate.

3,892,893

FIBRE TREATMENT

Geoffrey Allan Smith, Lynton Darnick, Melrose, and Richard Young, 31 Craig Park Gardens, Galashiels, both of Scotland

Filed Sept. 20, 1972, Ser. No. 290,747

Int. Cl. B44d *1/44*

U.S. Cl. 427—352 **7 Claims**

1. A method of treating a wool textile material consisting of fibre or fabric which comprises:

immersing said material in a bath of a liquid medium at a temperature of between 25° and 45°C., said liquid medium comprising a treating agent consisting of member of the group consisting of a polyamide epichlorhydrin resin or a prepolymer of an aliphatic polyurethane containing free isocyanate groups;

adjusting the quantity of said liquid medium on said material until the ratio of liquid medium to textile material is between 0.5 to 1.0 and 3.0 to 1.0 weight for weight;

pressing the textile material for not more than thirty minutes at a pressure of between 3 pounds per square inch and 100 pounds per square inch;

washing off any excess medium from said textile material; and

recovering the treated textile material as the product of the process.

3,892,894

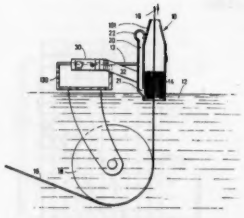
WIPING HOT DIPPED GALVANIZED WIRE OR STRIP

Jack Pryor Sciffer, New Lambton, Australia, assignor to Australian Wire Industries Proprietary Limited, Victoria, Australia

Filed Mar. 16, 1973, Ser. No. 341,851

Int. Cl. B05c *11/10;* **C23c** *1/00*

U.S. Cl. 427—367 **9 Claims**



1. The method of wiping hot dipped galvanized wire or strip comprising the steps of

a. drawing said galvanized wire or strip upwardly from a bath of molten zinc through a laterally confined wiping bed of gravel or other hard and inert material in the form of free tumbling bodies or granules which float on said bath of molten zinc, and

b. vibrating said bed to maintain it in a dense and uniform condition so that the coatings formed on the wire or strip are more uniform in thickness.

3,892,895

METHOD FOR ADHERING POLYAMINO ACID COATING TO PLASTICIZED POLYVINYL CHLORIDE

Kazushi Toogoo; Mineo Yamagata, and Akira Akamatsu, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 250,066, May 3, 1972, abandoned. This application May 21, 1973, Ser. No. 362,171
Claims priority, application Japan, May 11, 1971, 46-31434
Int. Cl. B32b *27/30*; D06n *3/04*
U.S. Cl. 427—385 5 Claims

1. A method of coating a surface of a body of plasticized polyvinyl chloride which comprises:

a. applying to said surface a primer solution essentially consisting of volatile organic solvent and of an elastomeric polyurethane dissolved in said solvent,
   1. said polyurethane being the product of a chain extending reaction between a urethane prepolymer having available isocyanato groups and a chain extending agent having active hydrogen,
   2. said prepolymer being the product of a reaction between an organic polyisocyanate and an organic compound having active hydrogen,
   3. said polyisocyanate having a cyclohexane ring in the molecule thereof,
   4. one of the isocyanato groups of said polyisocyanate being bound to said ring directly or through alkylene only;
b. removing said solvent to deposit said polyurethane on said surface; and
c. coating said surface carrying said polyurethane with a top coating essentially consisting of poly-α-amino acid.

3,892,896

PROCEDURE FOR SURFACE TREATMENT OF WOOD

Karl Ingvar Georg Johansson, Spanga, Sweden, assignor to Erik Gustav Lennart Eriksson, Valberg, Sweden

Continuation-in-part of Ser. No. 193,544, Oct. 28, 1971, abandoned. This application Feb. 19, 1974, Ser. No. 443,415
Int. Cl. B44d *1/16*
U.S. Cl. 427—392 10 Claims

1. A process for the surface-treatment of wood, which comprises pretreating the wood at a temperature below about 120°C for about 1–3 hours with a condensable or polymerizable hydrophilic liquid monomer material, that is substantially free of any solvent and that causes the wood to swell or dissolves constituents of the wood, until the desired depth of penetration of the substrate surface has been attained; thereafter at room temperature treating the resulting pretreated wood with an impregnating agent, that reacts with said monomer material, for a time sufficient to condense or polymerize the same with said monomer material; and then hardening the impregnated condensate or polymerizate thus formed in the resulting treated wood, hardening being accomplished by first heating the impregnated wood to a temperature of about 80°C to about 140°C, followed by hot-pressing at a temperature of about 130°C to about 180°c.

3,892,897

PROCESS FOR MAKING BASE METAL TITANATE CATALYTIC DEVICE

Hermann L. Rittler, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 294,073, Oct. 2, 1972, abandoned. This application Mar. 7, 1974, Ser. No. 448,835
Int. Cl. B01j *1/06*
U.S. Cl. 427—463 4 Claims

1. A process for making a base metal titanate catalytic device which comprises the steps of:

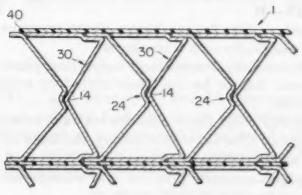
a. preparing an acid-stabilized alcohol solution consisting essentially of a lower alkanol, a weak organic acid, and alcohol-soluble compounds, said alcohol-soluble compounds including a lower alkoxide of titanium and a salt of at least one other metal selected from the group consisting of Mn, Co, Fe, Cu, Al and Cr, and said alcohol-soluble compounds being present in proportions calculated to yield, upon pyrolytic conversion to the metal oxides, a composition consisting essentially, in weight percent, of about 15–85% TiO_2, 15–70% $M''O$, wherein M'' is Mn^{+2}, Co^{+2}, Fe^{+2} or Cu^{+2}, and 0–60% $M_2'''O_3$, wherein M''' is Al^{+3}, Fe^{+3}, Cr^{+3}, Mn^{+3} or Co^{+3};
b. contacting a refractory ceramic support structure with said solution to produce a solution-coated support structure;
c. contacting said solution-coated support structure with an ammoniacal precipitating agent to precipitate from said solution onto said support structure a coating of the hydroxides of said titanium and other metals; and thereafter
d. heating said structure to a temperature in the range of about 600°–1200°C. for a time in the range of about 1–4 hours to convert said coating of hydroxides to an oxide coating comprising at least one titaniferous crystal phase selected from the group consisting of:
   i. $M_2''TiO_4$—$M''M_2'''O_4$ solid solutions of cubic or pseudocubic structure;
   ii. $M''TiO_3$—$M_2'''O_3$ solid solutions of hexagonal or pseudohexagonal structure; and
   iii. $M''Ti_2O_5$—$M_2'''TiO_5$ solid solutions of orthorhombic or pseudo-orthorhombic structure.

3,892,898

PANEL CORE

Shinjiro Yasui, 37, Aza Higashioka, Hokkaido, Japan

Filed Oct. 16, 1972, Ser. No. 297,710
Claims priority, application Japan, Oct. 15, 1971, 46-95266
Int. Cl. B32b *3/12*
U.S. Cl. 428—116 2 Claims



1. A panel core comprising at least one row of core members and partition plates on opposite sides of the core members in the row, each core member comprising a first panel member having a generally W-shaped cross section with end panel portions and a folded panel portion therebetween having a central apex fold and joined to the end panel portions along folds, and a second panel member having a generally V-shaped cross section with end panel portions joined at an apex fold, the free ends of the end panel portions of the second panel member being attached to the first panel member at the folds of the first panel member where the end panel portions of the first panel member join the folded panel portion of the first panel member, the outside surfaces of the end panel portions of the first panel member being secured to said partition plates, adjacent core members, in the folded condition of the panel core when the partition plates are close to each other, having the flat folded second panel member of one core member interleaved between one of the end panel portions and the folded panel portion of the first panel member of the next adjacent core member and being unsecured to each other, and in the expanded condition of the panel core when the partition plates are moved away from each other, the central apex fold of the folded panel portion of the first panel member of one core member being opposed to the apex fold of the second panel member of the next adjacent member, one

of the apex folds having an inverted V-shaped portion interlocking with the other apex fold for retaining the panel core in the expanded condition.

3,892,899
ROOF CONSTRUCTION
Paul P. Klein, 24 Van Meter Fens, New Rochelle, N.Y. 10804
Filed July 19, 1973, Ser. No. 380,864
Int. Cl. B32b *3/14*
U.S. Cl. 428—49 **4 Claims**

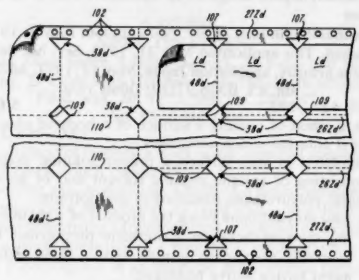
1. A roof construction capable of withstanding constant and active foot traffic, which comprises, in combination:
   a. A roof deck;
   b. A water impermeable membrane affixed to the upper surface of said roof deck;
   c. A thermal insulating member disposed on the upper surface of said water impermeable membrane;
   d. A ballast member comprised of a multitude of precut concrete or cementitious blocks or paving squares disposed on the upper surface of said thermal insulating member; and
   e. A substantially water impermeable and non-absorbent wearing surface member affixed on the upper surface of said ballast member, to provide a relatively smooth, resilient and uniform upper surface to said wearing surface member.

3,892,900
MASKING FILMS
Keizo Shima, Suita, and Tetsuo Ishihara, Amagasaki, both of Japan, assignors to Daicel Ltd., Japan
Filed Oct. 24, 1973, Ser. No. 409,162
Claims priority, application Japan, Nov. 2, 1972, 47-110033; Nov. 2, 1972, 47-110034; Sept. 10, 1973, 48-102450
Int. Cl. B41n *1/24*
U.S. Cl. 428—40 **15 Claims**

1. A masking film for masking a photo-sensitive material, consisting essentially of a laminate of:
   A. a substantially transparent supporting plastic film, at least one surface having been treated by roughening or oxidation;
   B. a colored resin layer adhered on said treated surface through an adhesive undercoating, the color of said resin layer being such as to be opaque to light used to expose said photo-sensitive material and transparent to other visible light; and
   C. a strippable film having at least one strippable surface adhered to said colored resin layer through a pressure-sensitive adhesive.

3,892,901
COMPOSITE LABEL WEB
Thomas M. Smith, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Aug. 7, 1972, Ser. No. 278,409
Int. Cl. B32b *3/16, 7/06*
U.S. Cl. 161—41 **1 Claim**

1. A composite web of pressure-sensitive labels, comprising; a longitudinally extending wide composite web including a web of supporting material and longitudinally extending narrow webs of pressure-sensitive label material having a full-gum coating of pressure-sensitive adhesive and being releasably adhered to the supporting material, the label material webs being closely transversely spaced-apart to expose longitudinally extending zones of the supporting material web, first holes through the wide composite web at longitudinally spaced-apart locations along at least some of the longitudinally extending zones, each first hole extending through a marginal side edge of one of the narrow label webs and the underlying supporting material and through the supporting material in the adjacent zone, the supporting material extending beyond the side edges of the narrow label webs at the respective sides of the wide composite web to provide feed strips, longitudinally spaced-apart second holes in the feed strips to facilitate feeding of the composite web, the label material webs being at least partially severed transversely into



labels along longitudinally spaced-apart lines extending to at least some of the first holes, and the supporting material being partially severed along at least some of the transverse lines and being partially severed in at least some of the longitudinal zones between the side edges of adjacent narrow label webs.

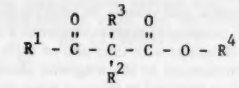
3,892,902
PLASTIC PANEL PAD CONSTRUCTION FOR SPACING CONCRETE PANELS
Robert John Ilukowicz, Coram, N.Y., assignor to Preco Industries, Ltd., Plainview, N.Y.
Filed Dec. 4, 1972, Ser. No. 312,199
Int. Cl.[2] B32B *7/08, 3/10;* **B65D** *57/00*
U.S. Cl. 428—99 **9 Claims**

1. A panel pad construction comprising base means having opposite sides and, on one of said sides, a plurality of spaced solid and substantially non-deformable hemispherical projections of equal height peaking at points in a common plane, said base means includes a plurality of bases, each said base forming a monolithic structure with respective of said projections, each said base being provided with a scoring serving selectively to divide the same into hingeably connected sections adapted to be broken into separate sections each of which has projections thereon, and relatively thin straps connecting the bases in serial alignment, said monolithic structure being of a high density polyethylene having a specific gravity of about 0.92–0.95.

3,892,903
METHOD OF COATING SURFACES WITH HIGH SOLIDS THERMOSETTING BETA-KETO ESTER COATING COMPOSITIONS AND THE RESULTING COATED ARTICLE
Rostyslaw Dowbenko, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 121,174, March 4, 1971, Pat. No. 3,741,935. This application Jan. 11, 1973, Ser. No. 322,648
Int. Cl. B32b *15/08*
U.S. Cl. 428—460 **7 Claims**

1. A method of coating which comprises applying to a surface a film of a heat-hardening, nongelled coating composition having a nonvolatile solids content of from about 80 to about 100 percent, the resinous vehicle of said coating composition comprising:
   a. from about 20 to about 95 percent based on weight of total reaction product and cross-linking agent of a reac-

tion product having a plurality of beta-keto ester groups wherein said reaction product is comprised of a beta-keto ester having the general formula:



wherein R^1 represents a hydrocarbon radical having 1 to 10 carbon atoms; R^2 and R^3 are each hydrogen or a hydrocarbon radical having 1 to 6 carbon atoms; and R^4 represents a hydrocarbon radical having 1 to 6 carbon atoms, and a polyol having the general formula:

$$R^5(OH)_n$$

wherein R^5 represents a hydrocarbon radical having 2 to about 20 carbon atoms, and n is an integer from 2 to 6; and

b. from about 5 to about 80 percent based on weight of total reaction product and crosslinking agent of a crosslinking agent containing alkylol groups or alkylol groups which have been etherified by reaction with an alcohol selected from a member of the class consisting of condensation products of an aldehyde with melamine, urea or benzoguanamine;

and curing said film.

3,892,904

GLASS CERAMIC ARTICLE HAVING A METALLIC COATING LAYER IN A LOCALIZED AREA OR ITS SURFACE AND METHOD OF MAKING THE SAME

Takeshi Tanaka, Nagoya, Japan, assignor to Ishizuka Garasu Kabushiki Kaisha, Aichi-ken, Japan

Filed July 2, 1973, Ser. No. 375,693

Int. Cl. B32b *17/06, 15/04*

U.S. Cl. 428—209 **2 Claims**

1. In a glass-ceramic article having, in localized areas of its surface, layers of at least one metal selected from the group consisting of copper and silver, said metallic layers formed by in situ metallic ion migration and not protruding outwardly beyond the adjacent surface not having the metallic layers and being integrally bonded to the glass-ceramic body through the intermediary of intermediate layers consisting of the metal and the oxides thereof, which are finely dispersed in the subjacent glass matrix, the improvement wherein the glass-ceramic article consists essentially of: a first glass-ceramic forming composition (A); and a second glass-ceramic forming composition (B), which is substantially the same as (A) but further contains from 0.5 to 5.0 percent by weight of the above metal, calculated as the metal based on the weight of the glass composition of at least one compound of said metals; said compositions (A) and (B) being bonded in such a manner that composition (B) is subjacent to the localized surface areas having the metallic layers and composition (A) comprises at least all of the remaining surface areas.

3,892,905

COLD WATER SOLUBLE PLASTIC FILMS

Robert Eyer Albert, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 129,566, March 31, 1971, abandoned, which is a continuation-in-part of Ser. No. 63,287, Aug. 12, 1970, abandoned. This application Feb. 2, 1973, Ser. No. 329,071

Int. Cl. B65d *81/00;* **B32b** *27/08, 27/06*

U.S. Cl. 428—220 **6 Claims**

1. A 0.0005 to 0,010 inch thick, cold water-soluble self-supporting film consisting essentially of from 10 to 75 parts by weight of a polymer having a weight average molecular weight greater than about 120,000 selected from the group consisting of polyvinyl alcohol which is 87 to 99 mol percent hydrolyzed polyvinyl acetate and polyvinyl pyrrolidone and from 90 to 25 parts by weight of a polymer having a weight average molecular weight of less than about 90,000 selected from the group consisting of polyvinyl alcohol which is 87 to 99 mol percent hydrolyzed polyvinyl acetate and polyvinyl pyrrolidone and from 0 to 100 parts by weight per 100 parts polymer of a hydrophilic plasticizer, provided that if the first polymer is polyvinyl alcohol, the second polymer cannot be polyvinyl alcohol, and if the first polymer is polyvinyl pyrrolidone the second polymer cannot be polyvinyl pyrrolidone.

3,892,906

FLAME RETARDANT FIBROUS MATERIAL HAVING IMPROVED DIMENSIONAL STABILITY

Ronald Swidler; William A. Sanderson, both of Palo Alto, and William A. Mueller, Pasadena, all of Calif., assignors to Cotton, Incorporated, New York, N.Y.

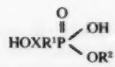
Continuation-in-part of Ser. No. 259,350, June 2, 1972, abandoned, which is a continuation of Ser. No. 153,094, June 14, 1971, abandoned, which is a continuation of Ser. No. 862,509, Sept. 30, 1969, abandoned. This application July 2, 1973, Ser. No. 375,438

Int. Cl. C09k *3/28*

U.S. Cl. 428—289 **21 Claims**

1. A process for imparting flame retardance and improved dimensional stability to cellulosic and wool fiber-containing material, which process comprises

contacting the material with cyanamide and at least one phosphonic acid represented by the structural formula:



wherein R^1 represents a divalent radical selected from the group consisting of lower alkylene, lower alkylidene and lower alkylidyne; X represents a covalent bond,

or —CO—, and wherein R^2 and R^3 represent monovalent radicals selected from the group consisting of hydrogen and lower alkyl; to deposit on the material a flame retarding and dimensional stability-improving amount of the phosphonic acid with cyanamide.

3,892,907

REINFORCED REFRACTORY HEAT-INSULATOR

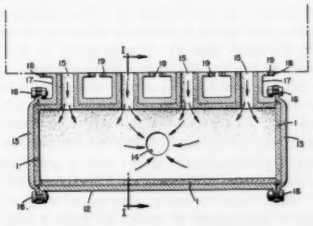
Itaru Niimi, Nagoya; Yasuhisa Kaneko, and Fumiyoshi Noda, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Claims priority, application Japan, Nov. 13, 1971, 46-90892

Filed Nov. 13, 1972, Ser. No. 305,894

Int. Cl. B32b *15/18*

U.S. Cl. 428—303 **6 Claims**



1. A reinforced refractory heat-insulator comprising a cast ceramic inner refractory lining containing dispersed metallic

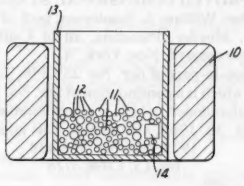
fibers, and an exterior iron or aluminum casting which envelops said refractory lining.

3,892,908

COATING OF SOLID SUBSTRATES WITH MAGNETICALLY PROPELLED PARTICLES

William R. Lovness, West Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 25, 1973, Ser. No. 373,028
Int. Cl. B44d *1/094*
U.S. Cl. 428—329 **7 Claims**



1. A process for coating particulate material upon the surface of a substrate comprising:

exposing said substrate surface in a confined volume to a plurality of disconnected and independently movable small permanent magnet elements and said particulate material, and

establishing within said volume, in addition to the magnetic field of said permanent magnet elements, a magnetic field varying in direction with time and of sufficient intensity to impart movement to the magnetic elements to cause the particulate material to impinge upon and to coat said exposed substrate surface.

3,892,909

SYNTHETIC DOWN

Samuel E. Miller, Winnetka, Ill., assignor to QST Industries, Inc., Chicago, Ill.

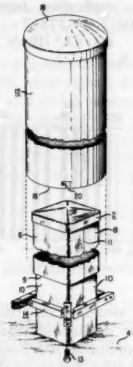
Filed May 10, 1973, Ser. No. 359,200
Int. Cl. A41g *1/00*
U.S. Cl. 428—371 **9 Claims**

1. An assemblage of man-made bodies each functioning in simulation of bird down as found in nature, each said body comprising a myriad of fibers formed into a rounded configuration which is capable of being repeatedly deformed in the manner of a spring by application of a load and recovery substantially to its original form upon release of the load.

3,892,910
FLOOD COVER FOR PEDESTAL CLOSURE

Arnold Ray Smith, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 9, 1974, Ser. No. 504,086
Int. Cl.[2] H02G 9/02
U.S. Cl. 174—37 **4 Claims**



1. In combination with a pedestal closure, a flood cover for preventing the entry of water into the terminal chamber of said pedestal closure comprising in combination:

an elongated container having a first open end installed over said closure and a second closed end sealed to prevent the leakage of air therethrough, said container including first mounting means about said first end; and

bracket means mounting said container over said closure comprising first and second bracket halves, fastening means fastening said halves together about said closure below said terminal chamber to securely clamp said halves to said closure, flange means extending from each said bracket half and including second mounting means thereon connected with said first mounting means on said container and holding said container over said closure whereby water is prevented from entering said terminal chamber by the entrapment of air in said container.

3,892,911
JUNCTION BOX FOR MOTOR VEHICLE ELECTRICAL SYSTEMS

Giuseppe Codrino, Quattordio, Italy, assignor to Cavis-Cavetti Isolati S.p.A., Felizzano (Alessandria), Italy

Filed July 30, 1974, Ser. No. 492,997
Claims priority, application Italy, Dec. 5, 1973, 53700/73
Int. Cl. H02g 3/08
U.S. Cl. 174—59 **3 Claims**

1. A junction box for a motor vehicle electrical system, comprising:

a hollow unitary main body incorporating, with reference to a give orientation:

a first end wall,

two symmetrical side walls each connected along a first edge to a respective opposite edge of said end wall,

a transverse bridging member interconnecting corresponding corners of said side walls at a second edge thereof, opposite said first edge,

means defining upper and lower aligned guideways in each said side wall, said guideways extending between said first and second edges,

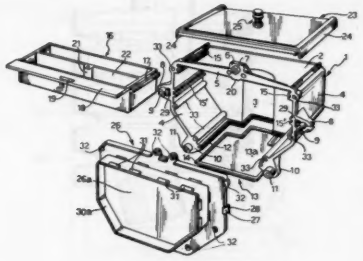
a plurality of apertured lugs on said body, said apertured lugs forming means by which said body is attachable to support elements of the bodywork of a motor vehicle,

a member forming a bottom wall having a rim slidably inserted into said lower guideways in said side walls closing the bottom of said unitary body,

a tray member having two parallel side edges slidably inserted into said upper guideways in said side walls of said unitary body,

a transparent lid member removably attached to said tray member,

a member forming second end wall attached to said body along the edges of said two side walls opposite the edges connected to said first end wall so as to extend substantially parallel to said first end wall, said second end wall



overlying the edges of said bottom wall member and said tray member to hold these in position against withdrawal along said upper and lower guideways,

first and second electrical connector units respectively mounted on said second end wall member and said bottom wall member, said connector units having pins for connection to terminals on the leads of a motor vehicle electrical system,

means electrically connecting said first and second electrical connector units together, and

means connecting said electrical connector units to said tray member for electrical connection to any electrical components and safety fuses which may be housed in said tray member.

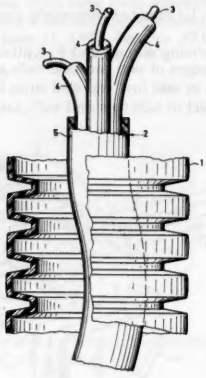
3,892,912
ELECTRICAL CONDUIT CONTAINING ELECTRICAL CONDUCTORS

Edgar Hauck, Konigsberg, Bavaria, Germany, assignor to Frankische Isolierrohr-und Metallwaren Werke Gebr. Kirchner, Konigsberg/Bavaria, Germany

Filed Dec. 13, 1973, Ser. No. 424,613
Claims priority, application Germany, Dec. 15, 1972, 2261530
Int. Cl.[2] H02G 3/04; B29F 3/10
U.S. Cl. 174—68 C **1 Claim**

1. As an article of manufacture, a cable assembly adapted to be pre-shaped prior to installation in various structures, particularly in the walls of buildings or the like, comprising, in combination, a pronouncedly flexible tube of electrically insulating synthetic plastic material, said tube being corrugated; and at least one plastically deformable shape-holding core loosely accommodated in and fractionally filling a part of said tube and extending axially thereof, said core being composed of at least two electrical conductors, at least one of said conductors being a wire which is substantially plastically deformable during bending, and each of said conductors being provided with a respective jacket of electrically insulating material, and a common cover of electrically insulating synthetic plastically deformable shape-holding material frictionally engaging said jackets and combining said conductors into

a bundle, whereby said cable assembly may be pre-shaped by bending said shape-holding core to a predetermined form in



which said flexible tube is substantially retained by the presence of said core.

3,892,913

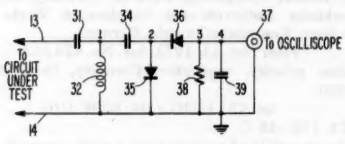
METHOD OF SETTING THE 4.5 MHz TRAP IN A TELEVISION RECEIVER

James Herbert Owens, Dallas, Tex., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 187,070, Oct. 6, 1971. This application May 7, 1973, Ser. No. 357,674

Int. Cl. H04n *5/00*

U.S. Cl. 178—5.8 R **4 Claims**



1. A method of setting the 4.5 MHz trap in a television receiver comprising:

injecting an audio modulated signal having a 4.5 MHz beat frequency within the IF amplifier of said receiver,

observing the amplitude of the output signal of said trap during said injecting step, and

adjusting the trap to cause said output signal to be set to a minimum level,

said observing step including the steps of applying a series resonant circuit resonating at 4.5 MHz at the output of said trap to provide a resonating signal at 4.5 MHz and detecting said resonating signal to provide a signal manifesting the amplitude of said output signal.

3,892,914

SYSTEM FOR RECORDING AND REPRODUCING PICTURE SIGNALS WITH AMPLITUDE REFERENCE SIGNALS

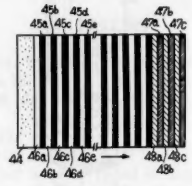
Shinji Takayanagi; Hitoshi Sato, and Koichi Koshikawa, all of Tokyo, Japan, assignors to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1973, Ser. No. 341,528

Claims priority, application Japan, Mar. 18, 1972, 47-27576; Mar. 18, 1972, 47-27577

Int. Cl.² H04N *5/84*

U.S. Cl. 178—6.7 A **29 Claims**



1. A recording medium comprising frames in which two kinds of amplitude modulated video signals are alternately recorded in the horizontal scanning direction of a raster as variations in the optical density of the medium without overlapping in the recording densities of the respective recording portions and at least one standard signal indicative of the signal intensity where the two kinds of signals are separated and/or the fixed bias levels of the two kinds of signals are recorded at the initial and/or terminal part of the horizontal scanning lines in the raster.

3,892,915

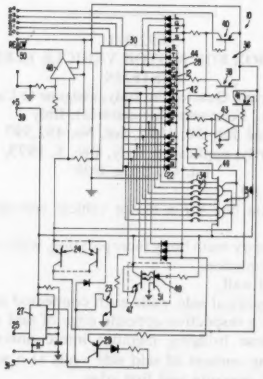
STENOGRAPHIC DATA RECORDING APPARATUS AND METHOD

Ronald L. Budworth, and Richard A. Van Leer, both of San Jose, Calif., assignors to Transcripts, Inc., Sunnyvale, Calif.

Filed Dec. 10, 1973, Ser. No. 423,356

Int. Cl. B41j *3/26;* **G06f** *15/20*

U.S. Cl. 178—21 **10 Claims**



1. A data processing system for use with a stenographic keyboard having a plurality of key-operated switches each associated to a different key for generating a single bit bilevel signal representative of the state of the associated key, said system comprising:

storage means adapted to be coupled to said switches and responsive to the actuation of at least one said key for cumulatively storing all of said single bit signals in a predetermined order;

means responsive to the subsequent release of all of said keys for disabling the storage of additional single bit signals;

means for serially fetching the contents from said storage means as a serial bit stream having a number of bits equal to the number of said keys after said subsequent release of all keys;

means for generating a plurality of predetermined different multibit binary prefix code signals each associable to a different portion of said serial bit stream;

formating means for interjecting said binary prefix code signals in the serial bit stream at predetermined locations to form a modified serial bit stream comprising a plurality of character groups each identified by the corresponding prefix code signal;

output means coupled to said formating means having an output terminal for manifesting said modified serial bit stream;

means for transferring said modified serial bit stream to said output means; and

means responsive to the transfer of the last bit of said modified serial bit stream to said output means for re-enabling said storage means to store all of said single bit signals in response to the subsequent actuation of one of said keys.

3,892,916
SIGNAL RECEIVERS

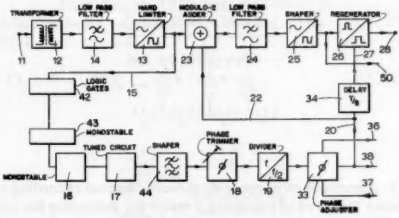
Richard Arnold Boulter, St. Albans, England, assignor to The Post Office, London, England

Filed May 9, 1973, Ser. No. 358,623

Claims priority, application United Kingdom, May 12, 1972, 22338/72

Int. Cl. H04I *27/22*

U.S. Cl. 178—88 **7 Claims**



1. A method of converting a modulated carrier signal modulated by an isochronous baseband data signal into an isochronous baseband data signal, said modulated carrier signal modulated by an isochronous baseband data signal hereinafter referred to as a diphase signal, including the steps of:

a. deriving a clock signal having a frequency equal to the reciprocal of the duration T of one element of the baseband data from the said carrier signal by isolating a p^{th} harmonic, where $p = 2$, of said carrier signal and frequency dividing said harmonic by p to give said clock signal;

b. deriving a data signal by modulo-2 addition of said diphase signal and said clock signal;

c. temporally comparing transitions in said data signal with transitions in said clock signal and phase adjusting said clock signal by $360°/p$ when transitions in said clock signal and transitions in said data signal have a temporal separation in excess of a predetermined magnitude; and

d. deriving said isochronous baseband data signal from said data signal by retiming said data signal with a delayed clock signal, said delayed clock signal delayed by substantially T/6 with respect to said clock signal.

3,892,917
SPEAKER SYSTEM FOR MULTICHANNEL STEREOSIGNAL REPRODUCTION

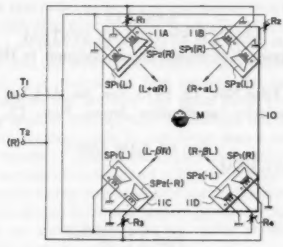
Hiromi Sotome, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 3, 1972, Ser. No. 294,613

Claims priority, application Japan, Nov. 25, 1971, 46-94652; Oct. 7, 1971, 46-92395; Oct. 7, 1971, 46-92396

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GQ **6 Claims**



1. A stereophonic speaker system for converting monophonic input signals to composite stereophonic output sound waves comprising in combination:

at least two front speakers;

means for energizing at least one of said front speakers with a monophonic L signal from a first channel;

means for energizing at least another of said speakers with a monophonic R signal from a second channel;

at least two rear speaker devices, each of said speaker devices including at least two speakers, said two speakers in each speaker device facing oppositely and in close proximity to one another, and a sound wave reflector positioned intermediate said speakers;

means for energizing one of said speakers in each of said speaker devices with a monophonic L signal from said first channel; and

means for energizing the other speaker in each of said speaker devices with a monophonic R signal from said second channel, said channel signals being in reverse phase relationship to one another and wherein the sound waves from each speaker are combined spatially to form a composite stereophonic signal.

3,892,918
SOUND SIGNAL CONVERTING APPARATUS FOR USE IN A FOUR CHANNEL STEREOPHONIC REPRODUCTION SYSTEM

Susumu Takahashi, and Ryosuke Ito, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1973, Ser. No. 355,420

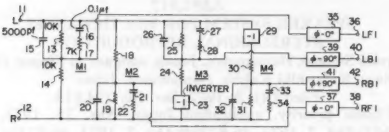
Claims priority, application Japan, May 2, 1972, 47-42991

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 GQ **9 Claims**

1. In a sound signal-converting apparatus including matrix circuit means for reproducing first, second, third and fourth four-channel output signals by additively combining two channel input signals in first and second ratios to produce said first and second output signals, respectively, and subtractively combining said two channel input signals in third and fourth ratios to produce said third and fourth output signals, respectively, the improvement wherein said matrix circuit means includes means for varying each of said first, second, third,

and fourth mixing ratios from a first ratio when both two channel input signals are at one frequency to a second higher



ratio when both two channel input signals are at a second higher frequency.

3,892,919
SPEECH SYNTHESIS SYSTEM

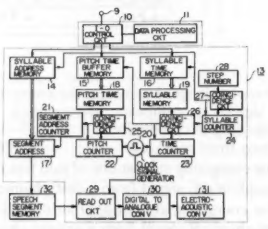
Akira Ichikawa, Kokubunji, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 12, 1973, Ser. No. 414,746

Claims priority, application Japan, Nov. 13, 1972, 47-112995

Int. Cl. G10l *1/00*

U.S. Cl. 179—1 SM **3 Claims**



1. A speech synthesis system comprising:

a speech segment memory which stores a plurality of speech segments;

a synthesizing apparatus, coupled to said speech segment memory, including

first means for selecting desired speech segments from said speech segment memory,

second means, coupled to said first means, for controlling the pitch period of each of said desired speech segments, so as to change the pitch frequency of the synthesized speech step-wise, and

third means, coupled to said first means and said second means, for connecting the desired pitch controlled speech segments together.

3,892,920
ACOUSTIC ACTIVATED SWITCH

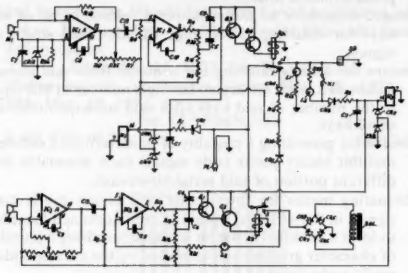
Eric A. Kolm, 37 Evans Rd., Brookline, Mass. 02146

Filed June 5, 1974, Ser. No. 476,439

Int. Cl. H04b *1/06*

U.S. Cl. 179—1 VC **7 Claims**

1. An acoustic switch responsive to acoustic and remotely generated signals in a predetermined frequency range for use in controlling at least two functions of an auxiliary device adapted to be connected to said switch comprising a first tuned transducer, a second tuned transducer, a first switch receiving input from said first transducer and adapted to be connected to said auxiliary for controlling a first function of said device, a second switch receiving input from said second transducer and operative during a conditioning interval and adapted to be connected to said auxiliary device for controlling a second function of said device, means electrically interconnecting said first and second switches and said first and second tuned transducers and arranged such that during said conditioning interval said first transducer is activated to re-



spond to a second acoustic signal to control said first function of said device.

3,892,921
METHOD AND APPARATUS FOR MONITORING RECORDING LEVEL

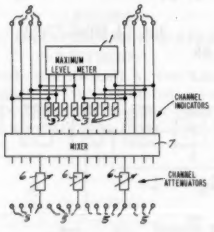
Peter Klaus Burkowitz, Iserhagen NBS, Germany, assignor to Polygram GmbH, Germany

Filed Jan. 15, 1973, Ser. No. 323,647

Claims priority, application Germany, Jan. 18, 1972, 2202244

Int. Cl. H04r *29/00*

U.S. Cl. 179—1 MN **7 Claims**



1. A method of monitoring a multi-channel recording comprising the steps of providing a meter for indicating the instantaneous maximum level of any of the output signals formed of signals from a plurality of input channels, providing a plurality of indicators for indicating the individual levels of the signals on said channels, and arranging said meter and said indicators in close visual proximity to each other.

3,892,922
TELEPHONE CONTROL SYSTEM

Robert W. Stankus, Fairfield, Conn., assignor to Letot, Incorporated, Fairfield, Conn.

Filed May 18, 1973, Ser. No. 361,653

Int. Cl. H04m *1/02*

U.S. Cl. 179—2 A **2 Claims**

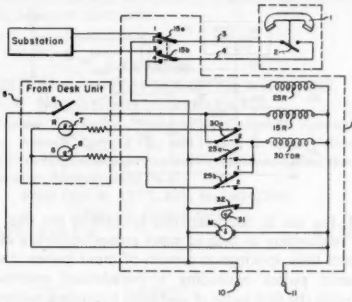
1. A telephone control system for use with a telephone having a manually operated switch with opened and closed positions and connected to a telephone substation by telephone wires, said system having:

A. a desk unit having an actuation switch and indicating means for indicating status of a room,

B. power means adapted to energize said indicating means, and

C. circuit means including:

1. means responsive to actuation of said actuation switch for disconnecting said telephone wires from said substation and connecting said wires to said indicating means, and
2. means responsive to closing of said manually operated switch for changing energization of said indicating means;



the improvement comprising having a time delay means in said circuit means for delaying operation of said means responsive to closing of said manually operated switch when said telephone wires are connected to said indicating means thereby delaying changing of energization of said indicating means when said manually operated switch is closed.

3,892,923
SUPERVISION ARRANGEMENT FOR A PULSE CODE-MODULATION SYSTEM

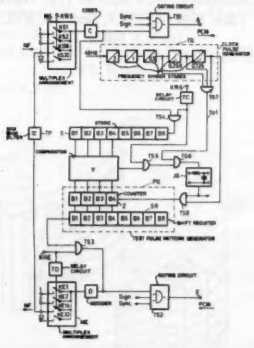
Georg Ranner, Lauf, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,674

Claims priority, application Germany, Aug. 16, 1972, 2240218

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 BF **9 Claims**



1. Terminal station apparatus for the transmission of information by means of pulse code modulation using *n* channels, *m* channels of which are provided for the transmission of analog information signals and (*n-m*) channels are provided for the transmission of signalling and synchronizing information, which comprises a transmitter including a multiplex apparatus having inputs connected to the information channels to be transmitted and a coder whose input is connected to the output of the multiplex arrangement; a receiver including a decoder having an input for receiving the pulse code modulation signal and having an output connected to a demultiplex apparatus having outputs from which signals associated with the different information channels can be derived; said multiplex apparatus cyclically scanning the channels for the analog information signals; said coder quantizing said analog information signals in accordance with a piecewise linear coding characteristic, said terminal station apparatus including a test pulse pattern generator having an output connected to the input of said decoder on the receive side during a period defined by at least one of the (*n-m*) channels for the transmission of signalling and synchronizing information and which generates a test pulse pattern corresponding to a PCM channel code word, said pattern being applied to said decoder for conversion into the corresponding analog value, the output of the decoder and the input of the coder being connected during said period to a connection line passing the analog value corresponding to the decoded test pulse pattern, said analog value being applied, through said connection line to the coder in which said analog value is converted into a second pulse pattern by means of coding, the apparatus further comprising means for storage of said second pulse pattern, and a comparator connected to the output of said means for storage as well as the output of said test pulse pattern generator, said comparator giving an alarm when said test pulse pattern and said second pulse pattern are not equal.

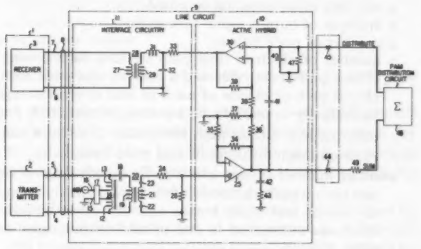
3,892,924
ACTIVE HYBRID SIDETONE PRODUCING CIRCUITRY FOR SIDETONELESS TELEPHONE

Patrick Alban Vachon, Arvada, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 12, 1974, Ser. No. 496,696

Int. Cl.² H04J *3/00*

U.S. Cl. 179—15 BY **5 Claims**



1. A hybrid circuit for use in a time division communication system to provide a controlled level of sidetone signal to an output path for communication signals supplied to a separate input path and for use in a time division communication system in which a telephone has a sidetoneless circuit configuration with its transmitter connected to said input path independently of its receiver which is connected to said output path, comprising a transmit amplifier having input means and output means and a receive amplifier having first and second inputs and an output means,

means coupling said input means of said transmit amplifier to said input path,

means for connecting said transmit amplifier output means via a time division switch to a time division transmit bus, connector means for connecting said first input of said receive amplifier to means for storing a sample of a communication signal received via a time division switch from a time division receive bus during a distinct time slot occurring in repetitive cycles,

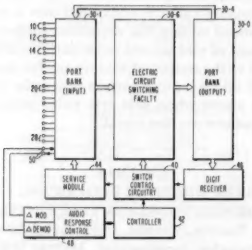
means connecting said receive amplifier output means to said output path,

and impedance means coupling said output means of said transmit amplifier to said second input of said receive amplifier for controlling a transmission of a sidetone signal from said input path through said receive amplifier to said output path.

3,892,925
ELECTRIC SIGNAL EXCHANGE SWITCHING ARRANGEMENT

Dale Edward Fisk, San Jose; Merle Edward Homan, Los Gatos; Charles Laurie Meiley; Zack Dwayne Reynolds, both of San Jose; Robert Vernon Watkins, Los Gatos, and Fritz S. Wiedmer, Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 3, 1974, Ser. No. 475,682
Int. Cl. H04 *3/02*
U.S. Cl. 179—15 AT **15 Claims**



1. An electric signal exchange switching circuit arrangement, comprising,

a multiple of input signal terminals,

a multiple of output signal terminals,

a number of node busses,

a number of electron flow path devices each having two circuit path electrodes and a control electrode with one circuit path electrode of each of said devices connected individually to one of said input signal terminals and the other of said circuit path electrodes of each of said devices connected to one of said node busses.

another number of said electron flow path devices having one circuit path electrode of each individually connected to one of said node busses and the other circuit path electrode connected to one of said output signal terminals,

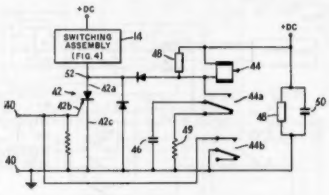
a timing pulse train generating circuit,

control circuitry having an input terminal connected to said timing pulse train generating circuitry and having output terminals coupled to said control electrodes of the first said number of electron flow path devices for successively applying signals appearing at said input signal terminals to said node busses at a predetermined rate and coupled to said control electrodes of said other number of electron flow path devices for sampling said node busses for said applied signals at a rate corresponding to said predetermined rate at which at least all of the applied signals are translated individually to said output signal terminals, and a further number of said electron flow path devices having one circuit path electrode of each individually connected to one of said node busses, the other circuit path electrodes connected in common to a point of fixed reference potential and control electrodes connected to said control circuitry, for successively closing the circuit paths of said further number of electron flow path devices at a rate related to said predetermined rate.

3,892,926
PULSE SHAPING AND SWITCHING APPARATUS

Robert Edwards, Fort Lee, N.J., and Paul A. Silberg, Cochituate, Mass., assignors to Radiofone Corporation, Red Bank, N.J.

Filed Feb. 22, 1973, Ser. No. 334,926
Int. Cl. H04g *1/36*
U.S. Cl. 179—16 EA **9 Claims**



1. For use in dial telephone systems or the like, apparatus for responding to desired input pulses occurring at predetermined time spacings in a train of input pulses, each of said desired pulses exceeding a preselected amplitude level, wherein the first pulse of said train exceeding said preselected amplitude level is a desired pulse and wherein one or more undesired pulses exceeding said preselected amplitude level may occur after each desired pulse and before the succeeding desired pulse, comprising,

pulse shaping means responsive to each of said desired and undesired pulses for producing a unidirectional trigger pulse therefrom,

circuit means responsive to each of said trigger pulses corresponding to a desired input pulse for generating a power output pulse,

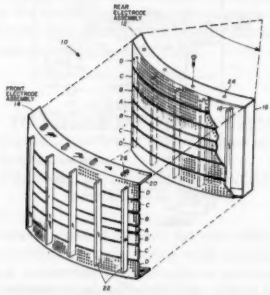
said circuit means including means responsive to each of said power output pulses for rendering said circuit means inoperative for a period of time substantially equal to the predetermined time spacing between desired input pulses,

and a control circuit actuated in response to each of said power output pulses.

3,892,927
FULL RANGE ELECTROSTATIC LOUDSPEAKER FOR AUDIO FREQUENCIES

Theodore Lindenberg, 1630 Apache Trl., Maitland, Fla. 32751

Filed Sept. 4, 1973, Ser. No. 393,789
Int. Cl. H04r *19/02*
U.S. Cl. 179—111 R **16 Claims**



1. An electrostatic speaker, comprising:

an electrode assembly comprising a section of a cylinder;

a diaphragm tensioned across a curved surface of said electrode assembly;

means for changing the area of said diaphragm energized with changes in audio frequency, said means including a plurality of curved parallel electrodes about said electrode assembly, said electrodes extending parallel to each other and perpendicular to the axis of said cylinder, and forming said cylindrical section; and wherein

some of said electrodes comprising two segments spaced on opposite sides of, and surrounding a substantial portion of a next adjacent electrode.

3,892,928

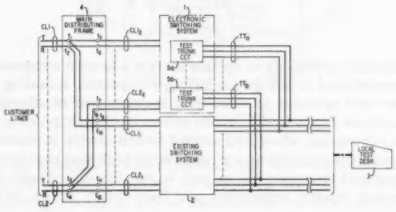
SWITCHING SYSTEM EQUIPPED WITH LINE VERIFICATION APPARATUS

Russell Carson Casterline, Naperville; Zbigniew Apoloniusz Krawiec, Aurora, both of Ill., and Ralph Broman Peterson, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 9, 1973, Ser. No. 404,704

Int. Cl. H04m *3/22*

U.S. Cl. 179—175.2 R **6 Claims**



1. A test trunk circuit for a communication switching system comprising: a first trunk port; a second trunk port; detector means; means for establishing a potential difference between said second trunk port and a reference terminal; and means responsive to control signals of said communication system for coupling said detector means to said first trunk port and to said reference terminal.

3,892,929

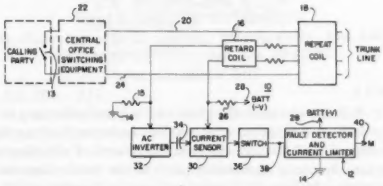
FAULT DETECTOR AND CURRENT LIMITER

Paul Shylo, Norridge, Ill., assignor to Cook Electric Company, Morton Grove, Ill.

Filed May 15, 1974, Ser. No. 470,073

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 R **11 Claims**



1. A fault detector and current limiter having an input terminal and an output terminal and being responsive to an input signal to supply an output potential from a potential source to said output terminal, said fault detector and current limiter comprising:

a first controlled conduction means operable in response to said input signal at said input terminal to supply said output potential to said output terminal,

a first current limiter means coupled to said first controlled conduction means and said potential source, said first current limiter means inhibiting the first controlled conduction means from supplying said output potential when the current through said first controlled conduction means rises above a specified magnitude, and

coupling means coupling said first current limiter means to said output terminal whereby said current limiter means further inhibits said first controlled conduction means in response to the potential at said output terminal.

3,892,930

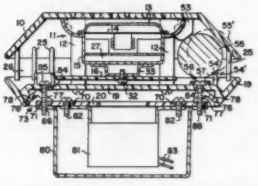
LOUDSPEAKER ENCLOSURE

Horst K. Wieder, 1207 Riverview Ln., Watertown, Wis. 53094

Continuation-in-part of Ser. No. 377,761, July 9, 1973, Pat. No. 3,835,256. This application July 2, 1974, Ser. No. 485,120

Int. Cl.[2] G08B *17/12*

U.S. Cl. 179—179 **11 Claims**



1. A combination loudspeaker, sensor and printed circuit board enclosure device comprising the combination of:

a resiliently deformable grill and guard portion,

a speaker bracket portion having leg portions,

a loudspeaker comprising a diaphragm and a cup,

a printed circuit board,

an ionization sensor,

a base portion,

a rear bracket portion removably attached to said base portion,

said base portion connected together with said printed circuit board and said speaker bracket portion by threaded members extending from said base portion through holes in said printed circuit board into said leg portions of said speaker bracket portion,

said loudspeaker connected to said printed circuit board by a wire and also connected to said printed circuit board and retained in seated relation to said speaker portion by a threaded member extending from said printed circuit board to a portion of said loudspeaker,

said speaker bracket portion provided with an annularly curved portion extending outwardly from said loudspeaker and providing a horn for said loudspeaker,

said sensor connected to said printed circuit board,

said base portion provided with a plurality of apertures for receiving wires from the rear of said base portion to connect to said printed circuit board,

said base portion provided with a plurality of means near each of said apertures to connect wires to said printed circuit board,

said grill and guard portion having apertures in front of the loudspeaker and providing a plurality of apertures on each side of the device to receive gas into the device,

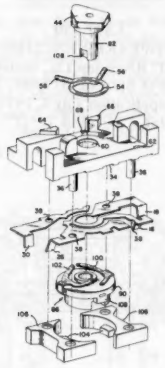
said grill and guard portion attached to said speaker bracket portion by projecting interlocking portions and removable from said speaker bracket portion by resilient deformation of said grill and guard portion and said projecting interlocking portions.

3,892,931

MINIATURE MOMENTARY ROTARY TYPE SWITCH FOR RESETTING ELECTRONIC WATCH DIGITAL DISPLAY

Joseph Larue Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 15, 1974, Ser. No. 451,617
Int. Cl.[2] H01H 21/38; G04C 23/00
U.S. Cl. 200—11 R 3 Claims



1. A switch, comprising:
a base having recessed portions,
coplanar circuits secured to said base and defining a plurality of switch poles,
portions of said circuits projecting outwardly of the plane of said circuits and into said recess portions to provide mounting lugs,
a cam having a shaft received rotatably through said base, a rotor mounted on said shaft having brush contacts thereon engageable selectively on said circuits upon rotation of said rotor,
said circuits being interposed between said cam and said rotor, and
resilient means encircling said shaft and having end portions engaged on said base, said cam being rotatable from a central position in either of two directions biasing resiliently the corresponding end portions of said spring means to store resilient spring energy for return rotation of said cam to said central position.

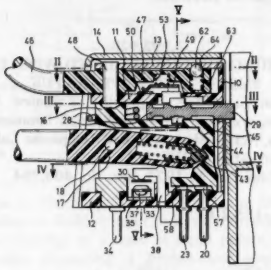
3,892,932

STEERING COLUMN SWITCH ASSEMBLY

Herbert Erdelitsch, and Walter Hecht, both of Bietigheim, Germany, assignors to SWF Spezialfabrik fur Autozubehor, Germany

Filed Feb. 25, 1974, Ser. No. 445,460
Claims priority, application Germany, Feb. 17, 1973, 2307855
Int. Cl. H01h 3/16, 9/00
U.S. Cl. 200—61.27 14 Claims

1. A steering column switch, for a motor vehicle having a steering column, high beam and low beam headlamps, signal lamps, a flashing indicator, parking lamps, and side lamps, said steering column switch comprising, in combination, a switch mounting means arranged to be secured to said steering column, said mounting means defining a first switch compartment; a first independently constructed switch device constructed and arranged for mounting in said first compartment and including a first switch lever mounted for movement in first and second mutually perpendicular planes, a first switch operable by movement of said first switch lever in said first plane and perpendicular to said second plane to select between high beam, low beam and flashing operation of said headlamps, and a switch operable by movement of said first switch lever in said second plane and perpendicular to said first plane to selectively connect said signal lamps to said flashing indicator and said parking lamps to a vehicle source of electric potential; and cover means cooperable with said mounting means to define a second switch compartment



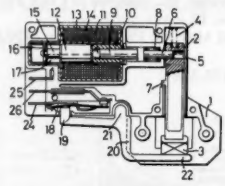
adapted selectively to receive therein a second independently constructed switch device having a respective actuating member and operable to selectively connect said headlamps and said side lamps to the vehicle source of electric potential; said cover means, when said second switch device is mounted in said second compartment, embracing both said switch devices and said mounting means and, in the absence of said second switch device, embracing said first switch device and said mounting means.

3,892,933

APPARATUS FOR LOCKING AND RELATED RELEASING OF CLOSURE DEVICES OF DOORS OF MACHINES, MORE PARTICULARLY FOR WASHING MACHINES

Onofrio Rocchitelli, 20, Via Stoppani, Rho, Italy

Filed Nov. 24, 1972, Ser. No. 309,415
Claims priority, application Italy, Nov. 26, 1971, 31664/71; Mar. 7, 1972, 21515/72; Apr. 28, 1972, 23725/72
Int. Cl. H01h 61/02, 71/16
U.S. Cl. 337—77 8 Claims



1. For use in controlling the locking and releasing of latching devices on access closures in machines such as washing machines and the like, internal members of which machines preferably cease movement prior to the time when such closures may be opened for internal access thereto, which latching devices include a moveable latch devices for cooperative interengagement with an associated hook member, which latch is to be locked in closed position during operation of the machine by a locking pin and is to be unlocked by actuation of said locking pin at the end of the machine operation with a pre-determined time delay, apparatus comprising a locking pin actuated by a piston moveable in a chamber, means for selectively heating said chamber according to the operative condition of the machine, and a heat expansible, low melting

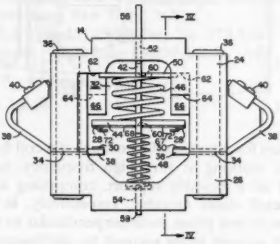
point wax contained in said chamber, expansion of which wax will cause actuation of said locking pin to effect locking of said latch in closed position and contraction of which wax will cause actuation of said pin to effect unlocking of said latch.

3,892,934

AUXILIARY CONTACT INTERLOCK FOR PREVENTING ELECTRICAL DISCONTINUITY BETWEEN MAIN BRIDGING CONTACT AND FIXED CONTACTS

Edward L. Richards, Aliquippa, and George M. Cametti, Beaver, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 14, 1974, Ser. No. 451,249
Int. Cl. H01h *3/60*
U.S. Cl. 200—288 **4 Claims**



1. An auxiliary contact interlock for use with an electromagnetic contactor having an operating arm, the interlock comprising a housing, at least one stationary contact mounted within the housing, a movable structure movable as a unit and including an actuator rod and a movable conductive contact carrier means mounted on the rod, the rod being slidably mounted in the housing by the operating arm to open and close the contacts when the arm is actuated, each movable contact carrier means having at least one contact button and at least one resilient contact, each resilient contact being located beside and biased to a location between the open and closed positions of the contact button and said stationary contact, the resilient contact having a U-shaped end portion engageable with said stationary contact, upon movement of the movable contact carrier means to the closed position with the stationary contact the resilient contact engages the stationary contact before and at a location adjacent to that of the contact button, and upon movement of the movable contact carrier means to the open position the resilient contact leaves the stationary contact after the contact button.

3,892,935

WALL SWITCH EXTENSION

Joe G. Patterson, 428 E. Gay St., Warrensburg, Mo. 64093

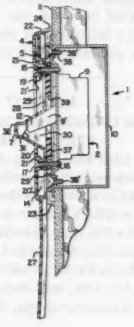
Filed July 24, 1974, Ser. No. 491,287
Int. Cl. H01h *3/02*
U.S. Cl. 200—331 **3 Claims**

1. An attachment for an electric light wall switch having a fixed part with screw aperture means and a movable switch lever and adapted to be located about standard height on a wall above a floor of a room comprising:

a. a mounting member having a front wall and depending side and upper and lower end walls, said front wall having spaced holes adapted to receive screws for connecting the mounting member to a switch fixed part in place of a cover plate, said front wall being spaced from the switch by engagement of said side and end walls with a wall in which the switch is mounted, said mounting member having a guide opening in the lower end wall and guide means depending from said front wall at said spaced holes with said holes extending therethrough, said front wall having an elongate opening between said holes for the switch lever;

b. a spacer plate fixed to said switch fixed part in overlying relation thereto and having openings aligned with the holes in said front wall and an elongate central opening through which the switch lever extends said central opening permitting movement of said lever to on and off positions;

c. an elongate switch actuator having a generally rectangular portion slidably mounted between the mounting member front wall and the spacer plate with an extension of the actuator extending through said guide opening in said lower end wall with said extension adapted to extend



downwardly and terminating in a hand hold within reach of a small child operating the switch from the floor, said rectangular portion having elongate openings slidably receiving said depending guide means for guided sliding movement, said rectangular portion having an aperture for movable reception of the switch lever for operation of said switch between on and off positions by sliding movement of said actuator;

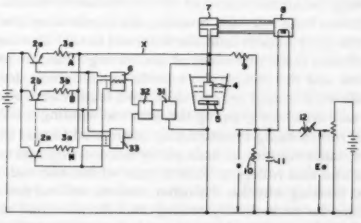
d. cooperative means on the mounting member and the rectangular portion of the actuator for stop engagement for limiting movement of the actuator in the mounting member to actuation of the switch lever between on and off positions.

3,892,936

PROCESS FOR ELECTRICAL DISCHARGE SHAPING AND APPARATUS THEREFOR UTILIZING DIFFERENT SHAPE WAVE FORMS

Kazuhiko Kobayashi, Seto, and Toshiro Oizumi, Nagoya, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 7, 1974, Ser. No. 440,546
Claims priority, application Japan, Feb. 19, 1973, 48-19964
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 P **7 Claims**



1. An apparatus for electrical discharge shaping which comprises:

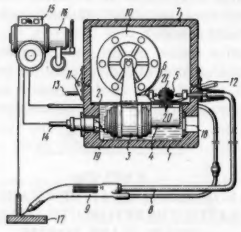
a workpiece;
an electrode disposed opposite to said workpiece to form a working gap therebetween;
a switching element for controlling a pulse voltage applied from a power source across said working gap between said workpiece and said electrode;
a first signal transmitter for controlling said switching element so as to pass a discharge pulse current having a rectangular waveform across said working gap;
a second signal transmitter for controlling said switching element so as to pass a discharge pulse current having a differing waveform having a slant line across said gap; and
a control device for selectively driving either of said first and second signal transmitters depending upon whether the time interval between the application of the pulse voltage and the initiation of discharge is less than or is greater than a predetermined time interval.

3,892,937

APPARATUS FOR UNDERWATER WELDING OF METAL STRUCTURES

Vladimir Evgenievich Paton, ulitsa Anri Barbjusa, 22/26, kv. 61; Vladimir Borisovich Smolyarko, ulitsa Artema, 26a, kr. 3; Mikhail Gdal Gershovich Belfor, pereulok Ivana Maryanenko, 11/12, kv. 28; Vladimir Grigorievich Pichak, ulitsa Lenina, 88–92, kv.59; Igor Mavrikievich Savich, ulitsa Vernadskogo, 85, kv. 86; Alexandr Grigorievich Rybchenkov, ulitsa Filatova, 1/22, kv. 61; Vasily Ivanovich Pankov, ulitsa Prazhskaya, 3, kv. 114, and Arkady Anatolievich Ignatushenko, ulitsa Kapitanovskaya, 20, kv. 1, all of Kiev, U.S.S.R.

Filed Dec. 14, 1973, Ser. No. 424,833
Claims priority, application U.S.S.R., Dec. 19, 1972, 1859980
Int. Cl. B23k *35/38*
U.S. Cl. 219—72 **12 Claims**



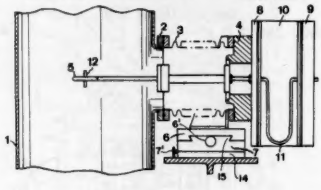
1. An apparatus for the underwater welding of metal structures, comprising: a motor and gear housing with a removable cover, defining therein a chamber filled up with a lubricant having dielectric properties; said cover having a through opening, a joint between said housing and said cover; an electric motor installed in said chamber; a reducing gear kinematically connected with said motor, also installed in said chamber and having a shaft the outer end of which extends via said opening; a device built into said housing, for transmitting the pressure of the environment onto the lubricant in said chamber; a wire enclosure made of a material also having dielectric properties; a coil and the like on the outside of said cover, for an electrode wire wound on said coil; wire feed rollers also located on said cover for gripping the wire and winding it off said coil, said rollers being kinematically connected to said outer shaft end; said enclosure at least partly surrounding said cover, said coil and said rollers; a flexible hose whose one end is fixed in said housing whereas the other, remote end carries a burner; means for hermetically sealing said chamber and said cover, said sealing means being provided at said opening for the shaft, at the point of mounting said transmitting device; a power supply for said motor, also disposed at said joint, means for controlling said motor, arranged outside said housing and electrically connected to said motor; and a power source with poles electrically connected to the wire and to a metal structure being welded.

3,892,938

SYSTEM FOR ADJUSTING THE POSITION OF A COIL

Georges Jean-Pierre Hubert Defosse, Wandre, Belgium, assignor to Elphiac, Brussels, Belgium

Filed Nov. 13, 1973, Ser. No. 415,336
Claims priority, application Belgium, Nov. 13, 1972, 4564
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.79 **2 Claims**



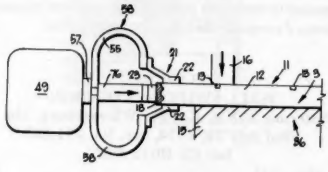
1. Means for adjusting the position of a coil fed by a current generator working at very high frequency, said coil being mounted on a movable support, comprising an assembly of two dovetail slides movable, respectively, in two different directions in one plane, both perpendicular to the axis of the coil, said support being secured to said assembly, four bar-shaped terminals parallel to the axis of the coil two of said terminals being mounted on said support for movement therewith and two terminals being stationary adjacent thereto, and two flexible and curved hoops being electrically conductive, each of said hoops connecting one stationary terminal to one movable terminal.

3,892,939

WELDING MACHINE

Victor James Medley, Brookvale, New South Wales, Australia, assignor to P.M. Andersen Manufacturing Pty. Limited, Brookvale, Australia

Filed Apr. 25, 1974, Ser. No. 464,160
Claims priority, application Australia, Oct. 18, 1973, 5296/73
Int. Cl. B23k *11/02*
U.S. Cl. 219—101 **14 Claims**



1. A welding machine comprising a base, a grating support platen on the base, a fluid actuated clamp on the base co-operating with the platen for clamping a grating thereto, an edge bar support on the base, a pair of rails fixed relative to the base but spaced therefrom, the rails being parallel to an edge of the platen,

a carriage, wheels on the carriage engaging and guided for movement by the rails, power operated drive means coupled to said wheels, a welding transformer on the carriage having a pair of secondary terminals thereon, a pressure fluid actuated electrode cylinder on the carriage positioned above the plane of the platen, a first welding electrode coupled to the movable element of the electrode

cylinder, a pressure fluid actuated welding head on the carriage, a horizontally movable second welding electrode, linkage means coupling the welding head to the second electrode for effecting said horizontal movement thereof upon actuation of the welding head, jumper leads interconnecting the welding electrodes to respective said secondary transformer terminals,

motor control means coupled to the power operated drive means for moving the carriage between welding stations, and weld control means coupled to the transformer for controlling energising of the transformer.

3,892,940

APPARATUS FOR UNIFORMLY HEATING MONOCRYSTALLINE WAFERS

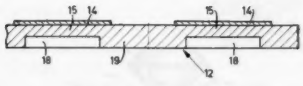
Jan Bloem, Emmasingel, Eindhoven, and Antonius Hermanus Goemans, Nijmegen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 27, 1973, Ser. No. 373,944

Claims priority, application Netherlands, July 1, 1972, 7209297

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.49 **11 Claims**



1. A susceptor for heating to a uniform temperature in a high frequency field monocrystalline wafers of a selected geometrical shape and size, comprising a body having two opposed major surfaces, one major surface having spaced recesses of geometrical shape and size similar to the selected geometrical shape and size of said monocrystalline wafers, said recesses effectively decreasing the heat generated by said field in said body in the thinner regions between said recesses and the other major surface thereof, whereby wafers of said selected geometrical shape and size positioned on said other major surface and aligned with said recesses are heated less in the central areas thereof to compensate for reduced heat radiation from said areas resulting in a more substantially homogeneous temperature distribution in said wafers.

3,892,941

HEATING TIMER FOR PULSE WELDERS

Erhard Lehle, Breite Strasse 21, 7031 Gartringen, Germany

Continuation of Ser. No. 210,978, Dec. 22, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,703

Claims priority, application Germany, Dec. 23, 1970, 2063459

Int. Cl. B23k *9/10*

U.S. Cl. 219—113 **7 Claims**

1. An analog timing circuit for use with a pulse type heating element such as in a welding machine comprising:

a heating element,

a welding bank thermally connected to said heating element, said welding bank having temperature-time characteristic functions,

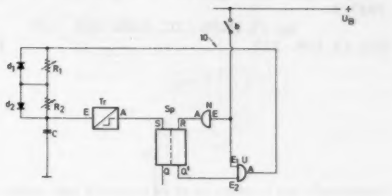
a power source electrically connected to said heating element,

a source of potential,

a capacitor connected to said source of potential for charging said capacitor,

variable resistive means connected in a charging circuit path to said capacitor and said source of potential for adjusting the charging time constant of said capacitor,

variable resistive means connected in a discharging circuit path to said capacitor and said source of potential for adjusting the discharging time constant of said capacitor,



said capacitor charging time constant resistive means and discharging time constant resistive means defining voltage-time characteristic functions of said capacitor, said voltage-time characteristic functions of said capacitor adjusted for approximating the temperature-time characteristic functions of said welding bank, and

electric circuit means for controlling the pulse duration from said power source to said pulse type heating element in response to the charge on said capacitor.

3,892,942

SEMI-AUTOMATIC SPOT-WELDING APPARATUS

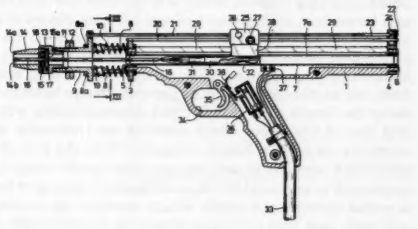
Giacomino Canale, and Pietro Dessy, both of Chiavary, Italy, assignors to Engen Buchel, Vaduz, Liechtenstein

Filed Sept. 13, 1972, Ser. No. 288,534

Claims priority, application Italy, Sept. 15, 1971, 12918/71

Int. Cl. B23k *9/00*

U.S. Cl. 219—127 **2 Claims**



1. A semi-automatic spot welder apparatus comprising a longitudinally extending pistol-shaped casing having a forward end, a hollow welding head, means adjustably securing said welding head to the forward end of said casing, an electrode holder longitudinally displaceable in said casing, means for securing a welding rod to said electrode holder, means associated with said casing for insulating said electrode holder from said casing, said casing having a hand-grip portion, and a switch in said hand-grip portion for connecting said electrode holder to an electrical current source, a disk secured to said casing's forward ends, a plurality of spaced bolts secured to said disk and extending outwardly of said casing longitudinally thereof, a plurality of springs on said respective bolts, biasing said welding head away from said disk, a first saw tooth rack with oppositely directed teeth, positioned above said first rack, a U-shaped driver secured to said electrode holder, said driver having slotted catches therein for alternate engagement with either of said first and second racks, said hollow welding head being formed with a flange provided with an adjustable

knurled nut for limiting the adjustment of said plurality of spaced bolts.

3,892,943

HAIRDRESSING INSTRUMENT

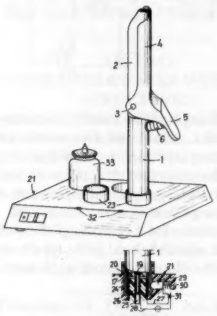
Jean Francois Van Droogenbroek, 88 Avenue Louise, Brussels, Belgium

Filed June 11, 1973, Ser. No. 368,786

Claims priority, application Belgium, June 12, 1972, 784729

Int. Cl. H05b *1/02*; **A45d** *1/04, 2/36*

U.S. Cl. 219—222 **2 Claims**



1. An instrument for hairdressers for use in treating hair with vapor formed under the action of heat, said instrument comprising an elongated solid cylindrical block formed with a plurality of internal longitudinal bores, one of said bores opening into the exterior of said block at one end of the block, a liquid supplying element removably inserted into said one of said bores from the open end of said bore, an electrical heating element located within another one of said bores for supplying heat to said block to vaporize liquid supplied by said liquid supplying element, each of said bores being isolated from one another, a plurality of vapor discharge holes formed along the length of said block and communicating with the said one of said bores which contains the removable liquid supplying element, a handle extending from the end of said solid block opposite to said one end, said handle being rigidly connected to said solid block, an elongated cover part having a partial cylindrical contour which matches the contour of said body part, said cover part extending longitudinally along said block in covering relation to said vapor discharge holes and being pivotally mounted on said cylindrical block, said cover part including an offset foot portion adjacent said handle and a spring interposed between said foot portion and said handle for biasing said cover part into a position covering said vapor-discharge holes, the end of said handle remote from said block including interior electrical contact means for detachably connecting said heating element to an external electrical current supply, a stand for said instrument, an electrical current supply circuit for said instrument located within said stand, said stand including an electric socket connected to said supply and adapted to cooperate with said interior electrical contact means at the remote end of said handle for supplying current to said heating element when the handle of said instrument is plugged into said socket, switch means located within said socket and positioned for selective actuation to a closed condition by the plugging of said handle into said socket, said switch means being connected in said current supply circuit in such manner as to ensure that the circuit of said current supply to said socket is closed and operative to supply current only when said remote end of the handle is plugged into said electric socket on said stand, said handle including first and second conductors for supplying said heating element with electrical current, said interior electrical contact means comprising a first cylindrical electrical contact provided internally at said remote end of said handle and connected to one of said conductors, said electrical contact means further comprising a central connector pin in said handle coaxial with said first cylindrical contact and connected to the other of said conductors, a tubular projection on said stand for receiving said handle and giving access to a recess in said stand, said electrical socket comprising a second cylindrical contact provided in said recess for cooperating with said first cylindrical contact on insertion of said handle into the recess, a female connector in the recess disposed coaxially relative to said second cylindrical contact for cooperating with said connector pin of said handle, and an insulating body in said recess separating said female connector and said second cylindrical contact.

3,892,944

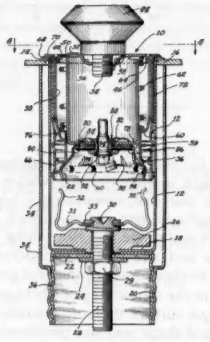
CIGAR LIGHTER IGNITING UNIT

Laurence G. Horwitt, New Haven, and Donald J. Mattis, Norwalk, both of Conn., assignors to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 457,963, April 4, 1974. This application Aug. 19, 1974, Ser. No. 498,294

Int. Cl.[2] F23Q *7/22*

U.S. Cl. 219—270 **2 Claims**



1. A low-cost, automated-production, automatic electric cigar lighter igniting unit comprising, in combination:

a. a metal plug body having a stamped, sheet-metal heating element cup insulatedly carried on its inner end, said cup constituting one contact of an electrical heating element circuit and the metal plug body constituting another contact of said circuit,

b. said cup having integral, projecting, heating-element support means formed in its side walls at locations spaced backward from the edge of the cup, and

c. an electrical heating element constituted of spirally-wound resistance ribbon disposed in said cup and having its ends connected respectively to the plug body and cup to be energized therethrough,

d. at least one outer convolution of said element being disposed in front of and closely adjacent the element support means and being adapted to contact the same to provide a back-up for the element when pressure is exerted against the opposite or frontal side thereof,

e. the convolutions of the heating element having a non-linear cross-sectional configuration and interlocking with each other to form a compact, substantially disk-like

member the portions of which resist relative axial displacement,

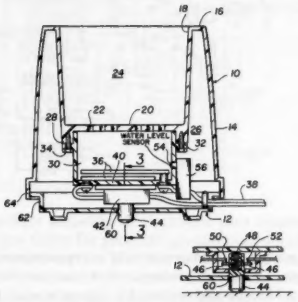
f. said integral, heating-element support means of the cup comprising a plurality of lanced, inwardly-protruding projections engageable with the element at spaced intervals around the circumference of the cup and providing openings in said side walls at the rear of the heating element.

3,892,945

ELECTRIC BOTTLE WARMER

Robert Lerner, 231 Harbor Hill Road, Roslyn, N.Y. 11576

Filed July 26, 1973, Ser. No. 382,828
Int. Cl. H05b *9/06*; **F24h** *3/06*; **H05b** *1/02*
U.S. Cl. 219—437 **2 Claims**



1. A heating device for bottles and the like, comprising an enclosing body adapted to be supported on a surface and defining an interior space for receiving said bottle, said body having a perforated bottom wall, a cup-shaped vessel, having unitarily formed bottom and side walls, for receiving a given quantity of liquid, removably mounted to depend below said perforated bottom and an electric heating element located within said vessel for heating said liquid to produce steam to pass through said perforations into contact with said container, a liquid sensing switch mounted on a side wall of said vessel above the bottom wall, said liquid sensing switch having a normally open position and an operable closed position in series with said electric heating element, said switch being responsive to the presence of liquid in said vessel to be rendered in closed position, a pressure switch having open and closed positions in series with said heating element to control said heating element, said switch being mounted to depend below said vessel and having a switch actuating plunger member extending outwardly of said body into contact with the surface on which it is supported, spring means resiliently biasing said plunger in switch open position, said spring means being sufficient to maintain said plunger in open position on receipt of said quantity of liquid in said vessel and while being free of a bottle, but being overcome on introduction of a bottle into said body.

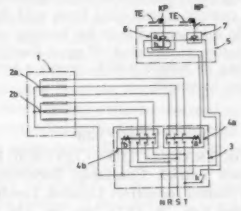
3,892,946

CONTROL SYSTEM FOR AN ELECTRICAL HEATING DEVICE, AND PARTICULARLY FOR AN ELECTRICAL SAUNA STOVE

Pentti Ilmari Rimmi, Hanko, Finland, assignor to Oy Helo-Tehtaat-Helo Fact. Ltd., Hanko, Finland

Filed Sept. 25, 1973, Ser. No. 400,622
Claims priority, application Finland, Sept. 26, 1972, 2614
Int. Cl. H05b *1/02*
U.S. Cl. 219—486 **5 Claims**

1. A control system for an electrical heating device, and particularly for an electrical sauna stove, comprising: three heating resistance arrangements adapted for being connected to three different phases, respectively, a coil switch arrangement comprising one three-pole coil switch, a control switch controlling said coil switch arrangement, a temperature controller connected in series with said coil switch arrangement and comprising an at least three-pole controller arrangement



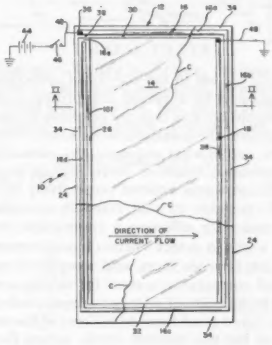
for each phase and arranged so as to connect and disconnect in stepwise manner, with certain preselected temperature intervals, the component loads of said respective resistance arrangements, said temperature controller being placed inside the heating device.

3,892,947

ELECTRICALLY HEATED PANEL WITH ANTI-SHOCK CONDUCTIVE STRIPS

Roy D. Strengholt, Holland, Mich., assignor to Donnelly Mirrors, Inc., Holland, Mich.

Filed Feb. 27, 1974, Ser. No. 446,151
Int. Cl. H05b *3/06*
U.S. Cl. 219—522 **16 Claims**



1. In an anti-fogging, heated windowpane of the type including a sheet of transparent glass having a pair of generally opposing, planar surfaces, a peripheral edge having a plurality of edge portions, and an electrically conductive, transparent coating applied to a portion of one of said surfaces, the improvement comprising the combination of an uncoated, insulating space extending around the entirety of said one surface of said sheet between the edge of said coating and said peripheral edge; a first elongated strip of electrically conductive material applied to said sheet within said uncoated, insulating space, said first strip having a beginning end located adjacent one portion of said peripheral edge of said sheet and extending around and being insulated from substantially all of the total length of the edge of said coating after which said strip includes a contact portion which extends into electrical contact with a predetermined length of a first portion of said edge of said coating; a second, elongated strip of electrically conductive material applied to said sheet in electric contact with a predetermined length of a second portion of said edge of said coating; said second portion of said coating edge and said

second, elongated strip of electrically conductive material being spaced across said coating a predetermined distance apart from and in general opposition to said first portion of said coating edge and said contact portion of said first strip; electrical conduction means for conducting electricity to said first strip and for grounding said second strip, said conduction means engaging said first strip at said beginning end, whereby an electrical current transmitted from said first strip across said coating to said second strip for heating said coating and said sheet is automatically shut off upon fracture of said sheet anywhere along its length which causes a severance of said first strip along its length.

3,892,948

ACCESS- OR TRANSACTION-CONTROL EQUIPMENT

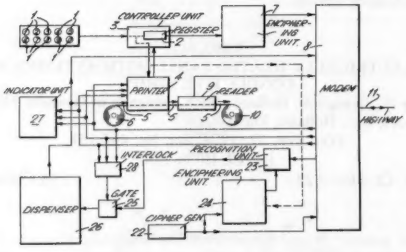
Geoffrey Ernest Patrick Constable, Berkhamsted, England, assignor to Smiths Industries Limited, London, England

Filed Feb. 26, 1973, Ser. No. 336,126

Claims priority, application United Kingdom, Feb. 28, 1972, 9145/72

Int. Cl. H04q *5/02*; **G07f** *7/00*; **G06k** *5/00*

U.S. Cl. 340—149 R **3 Claims**



1. Equipment for use in the control of authorization of an operation requested by a person comprising: a plurality of manually-operable devices that are operable to enter a word into the equipment, the particular word entered being dependent on which, and in what sequence, the manually-operable devices are operated; means to derive signals in accordance with two different words entered respectively by successive sequences of operation of said manually-operable devices; comparison means for effecting a comparison between the two different words to detect whether a predetermined correspondence exists between them, said comparison means comprising a signal comparator, a store for storing a multiplicity of words at a multiplicity of addresses respectively, means for reading out a stored word from an address of the store dependent on one of the two entered words, means for supplying signals in accordance with the other entered word to the signal comparator, and means for supplying signals in accordance with the word read out from the store to the signal comparator for comparison with the signals supplied thereto in respect of the said other of the two entered words; and means for signifying authorization of said operation in dependence upon the detected existence of said predetermined correspondence.

3,892,949

CIRCUIT FOR DETERMINING THE TIME OF TRANSITIONS IN AN ALTERNATING SIGNAL

George Bertram Dodson, III, Shirley, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 22, 1974, Ser. No. 462,771

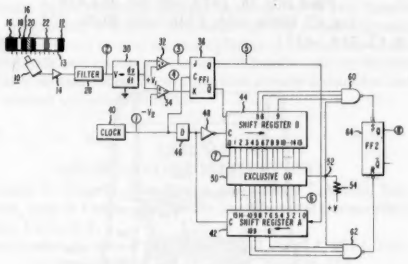
Int. Cl. G06k *7/10*; **G08c** *9/06*

U.S. Cl. 235—61.11 E **7 Claims**

1. In combination:

first means responsive to an alternating signal for producing a first stream of bits in response to said alternating signal being at a fixed value and for producing a second different stream of bits in response to said alternating signal transitioning from one fixed value to another fixed value, only one of said first and second bit streams being produced at any one time;

second means responsive to the N most recent bits of said bit streams produced by said first means, where N is a given integer in excess of the number of bits in said second bit stream, for comparing the ith bit with the $(N - i)$th bit, for $i = 1$ through N, and for producing a signal indicative of correspondence of the N bit pairs; and



third means, responsive to said correspondence signal and responsive to the presence of at least the minimum number of bits of said second bit stream needed to differentiate it from said first bit stream being present in said N most recently received bits, for producing a pulse indicating that a transition in said alternating signal has occurred, the timing of the pulse being indicative of the time of occurrence of said transition.

3,892,950

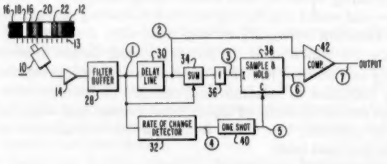
AVERAGE VALUE CROSSOVER DETECTOR

George Bertram Dodson, III, Shirley, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 22, 1974, Ser. No. 462,770

Int. Cl. G06k *7/10*; **G08c** *9/06*

U.S. Cl. 235—61.11 E **15 Claims**



1. In combination:

delay means responsive to an alternating input signal for delaying said signal;

means producing a signal equal to the average value of the delayed and undelayed alternating signal;

means storing said average value signal when it is at a fixed value, and

comparator means responsive to the signals produced by the delay means and storing means for producing a signal at a first level when the amplitude of the delay means signal exceeds that of the other signal and for producing a signal at a second, different level when the inverse is true.

3,892,951
METHOD AND APPARATUS FOR ADJUSTING AN ELECTRONIC YARN CLEANER

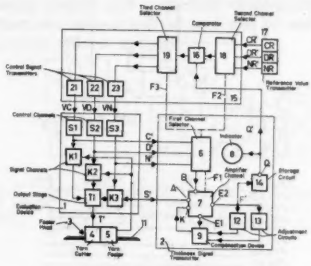
Hansruedi Stutz, Dietlikon, Switzerland, assignor to Aktiengesellschaft Gebruder Loepfe, Zurich, Switzerland

Filed Jan. 28, 1974, Ser. No. 437,494

Claims priority, application Switzerland, Feb. 5, 1973, 1550/73

Int. Cl. D02j *1/14*; **H01j** *19/82*

U.S. Cl. 235—151.3 **17 Claims**



1. A method for adjusting an electronic yarn cleaner which embodies a yarn feeler for generating a scanning signal dependent upon the cross-section of a yarn to be cleaned and at least one controllable channel connected with the yarn feeler for evaluating the scanning signal and for triggering a yarn cutting device when there is present a defective cross-section of the yarn, the improvement comprising the steps of: deriving from the scanning signal, during running of the yarn, a thickness signal, the magnitude of which is representative of the yarn thickness determined over a longer yarn section, for the purpose of automatically adjusting at least one evaluation channel, and feeding the thickness signal defining a control signal or a signal derived therefrom defining a control signal to the evaluation channel in order to be able to adjust its response threshold in the same sense as the magnitude of the thickness signal.

3,892,952
DIGITAL DIFFERENTIATION CIRCUIT

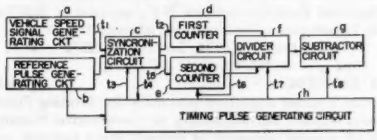
Akira Shibata, Okazaki, and Atutoshi Okamoto, Toyohashi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 20, 1974, Ser. No. 453,160

Claims priority, application Japan, Mar. 22, 1973, 48-33211

Int. Cl. G06f *15/20*

U.S. Cl. 235—151.32 **9 Claims**



1. A digital differentiation circuit for differentiating a frequency proportional to a detected displacement speed, comprising:

a reference pulse generating circuit for generating reference pulses having a predetermined frequency;

a displacement speed detector for generating output pulses having a frequency proportional to a detected displacement speed;

a timing pulse generating circuit for recurrently generating a reference timing pulse having a predetermined reference time width;

a synchronization circuit connected to said timing pulse generating circuit, said reference pulse generating circuit and said displacement speed detector whereby the leading edge of said reference timing pulse is synchronized with the leading edge of said detector output pulse and the leading edge of said reference pulse to continuously generate said reference pulse and said detector output pulse synchronized with each other during a counting period extending from the leading edge of said synchronized reference timing pulse to the trailing edge thereof which was extended to the first leading edge of said detector output pulse generated after the termination of the reference time width of said reference timing pulse;

a first counter connected to said synchronization circuit whereby the number of said detector output pulses generated during said counting period is counted repeatedly for each said counting period;

a second counter connected to said synchronization circuit whereby the number of said reference pulses generated during said counting period is counted repeatedly for each said counting period;

a divider circuit connected to said first and second counters whereby every time said counting period terminates, the count of said first counter is divided by the count of said second counter to obtain a displacement speed; and

a subtractor circuit connected to said divider circuit whereby every time a displacement speed is computed by said divider circuit, a subtraction is performed on said computed displacement speed and a just previously obtained displacement speed to determine an acceleration or deceleration of said detected displacement speed.

3,892,953
DIGITAL FILTER

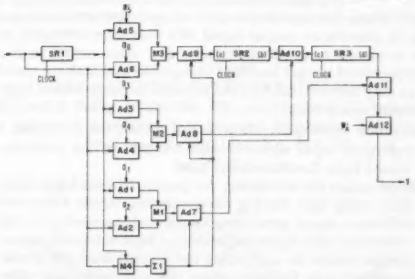
Henri Nussbaumer, LaGaude, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 10, 1974, Ser. No. 513,796

Claims priority, application France, Oct. 23, 1973, 73.38742

Int. Cl. H04b *3/04*, *3/14*

U.S. Cl. 235—152 **3 Claims**



1. A digital filter for filtering signals representing bytes of data corresponding to samples of an analog signal carrying information and noise, said filter including:

a first plurality of adders, each having a constant input indicating a coefficient term of said filter and a second input receiving and byte signals;

a shift register to delay said byte representing signals by one sample period;

a second plurality of adders, each having a constant input representing other filter coefficient terms and another input receiving the output of said shift register;

a plurality of multiplier circuits, one receiving said byte representing signals and the output of said shift register and the others each receiving the outputs of one adder from said first plurality and one adder from said second plurality;

an inverter to complement the sign of the output of said one multiplier;

a third plurality of adders to combine the outputs of each of said other multipliers with the sign inverted output of said one multiplier; and

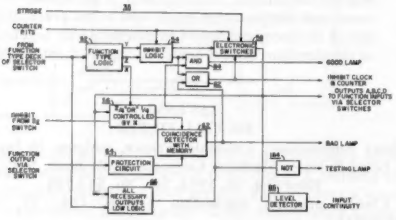
a group of shift registers and adders to combine the outputs of said third plurality of adders in a time delayed sequence to provide output signals representing the data bytes of said information signal.

3,892,954

PROGRAMMABLE, TESTER FOR PROTECTION AND SAFEGUARDS LOGIC FUNCTIONS

James A. Neuner, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 4, 1972, Ser. No. 241,049
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 AC **7 Claims**



1. A tester for sequentially testing the operation of a plurality of logic circuits respectively connected to perform a number of different predetermined logic functions each having n inputs, where n is a predetermined integer, operably arranged so as to provide an output signal of a first state whenever at least m of said n inputs assume said first state, where m is a predetermined integer less than or equal to n and where n and m can vary between each of the separate predetermined logic functions, comprising:

reference signal generating circuit means for providing a reference input signal to said n inputs of the predetermined logic function under test;

circuit means for simulating the predetermined logic function under test, having corresponding inputs from said reference signal generating means and responsive to said reference input signal to produce a logic reference signal;

circuit means for comparing the outputs from the predetermined logic function under test with said logic reference signal and for providing an alarm signal when a difference is indicated; and

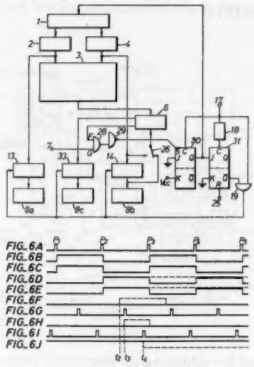
means for switching the inputs of the tester connected to the logic function under test to the next of the sequence of the plurality of logic circuits to be tested, after the test on the circuit being tested is completed and simultaneously programming said reference signal generating means and said simulating means to respectively provide said reference input signal and logic reference signal corresponding to the next of the sequence of the plurality of logic circuits to be tested.

3,892,955

PROGRAM CONTROLLED TESTING SYSTEM

Tsugie Maejima, Gyoda, Japan, assignor to Takeda Riken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1974, Ser. No. 445,044
Claims priority, application Japan, Feb. 26, 1973, 48-22899
Int. Cl. G11c *29/00*
U.S. Cl. 235—153 AC **8 Claims**



1. A program controlled testing system including a microprogram control unit, an address unit for storing an address contained in an instruction read out from the microprogram control unit, a reference data generator for storing a reference data, said address being used to access a storage unit to be tested to enter the reference data into the storage unit at said address, and an output data memory for storing an output data which is read out from the storage unit at said address for subsequent comparison of the output data with the reference data; the system comprising:

an address register into which the content of the address unit is entered;

a reference data register into which the content of the reference data generator is entered;

an output data register into which the content of the data memory is entered;

a comparator for comparing the content of the reference data register and the content of the output data register;

means for performing the entry into the address register; the reference data register and the output data register, respectively, at a time later than the entry into the address unit, and

entry inhibit means for inhibiting said entry in response to a non-coincident output from the comparator.

3,892,956

CASCADE DIGITAL FAST FOURIER ANALYZER

Peter Siegfried Fuss, Greensboro, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1971, Ser. No. 212,572
Int. Cl. G06f *15/34*
U.S. Cl. 235—156 **3 Claims**

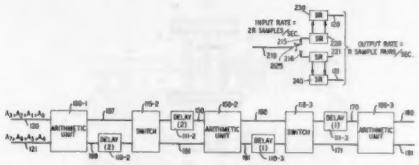
1. A fast Fourier transform processor for forming Fourier coefficient signals corresponding to consecutive N-sample records of a single sequence of ordered input samples, each sample appearing during a respective consecutive fixed 1/2R-second interval of time, R being a constant value, comprising a plurality of ordered cascaded processing stages

A. the first of which stages comprises

1. an arithmetic unit having first and second input terminals and first and second output terminals for generating at said output terminals during successive fixed 1/R-second intervals of time pairs of output signals representing the sum and difference of a first product

signal and a signal applied at said first input terminal, said first product signal representing the product of a signal applied at said second input terminal and a predetermined weighting factor, and

2. means for applying, during 2M consecutive ones of said fixed 1/R-second intervals of time, $M > N/2$ successive pairs of said input samples of consecutive N-sample records of said single sequence to said first and second input terminals during said successive fixed intervals of time while excluding other signals from said input terminals, said pairs each including a selected sample from the first half of one of said N-sample records of input samples and a uniquely corresponding sample from the second half of said one of said N-sample records of input samples,



B. each stage after the first comprising

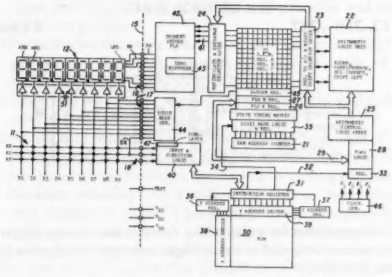
1. a pair of input terminals,
2. a pair of output terminals,
3. a network for selectively delaying signals applied at said input terminals,
4. arithmetic means for forming output pairs of signals corresponding to the sum and difference of a second product signal and a signal applied at said pair of input terminals and selectively delayed by said network, said second product signal representing the product of a predetermined weighting factor and another signal applied at said pair of input terminals and selectively delayed by said network.

3,892,957

DIGIT MASK LOGIC COMBINED WITH SEQUENTIALLY ADDRESSED MEMORY IN ELECTRONIC CALCULATOR CHIP

John D. Bryant, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 24, 1973, Ser. No. 400,473
Int. Cl. G06f 7/48
U.S. Cl. 235—156 **10 Claims**



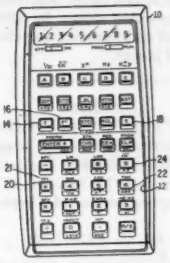
1. An electronic calculator system of the type implemented in monolithic semiconductor means, comprising data memory means having an array of memory cells addressed in sequence, an arithmetic unit for executing operations on data from the memory means, a read-only-memory for storing a large number of instruction words to define the operation of the system, storage means for receiving a part of an instruction word for defining a timing mask, a logic array connected to the storage means and responsive to said part of the instruction word and also connected to receive timing singals used to address the data memory in sequence, the logic array producing one of a plurality of different timing masks in accord with said part of the instruction word, and means for coupling the data memory to the arithmetic unit responsive to the timing masks.

3,892,958

INVERSE/COMPLEMENTARY FUNCTION PREFIX KEY

Chung C. Tung, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 11, 1974, Ser. No. 432,736
Int. Cl.² G06F 3/02
U.S. Cl. 235—156 **9 Claims**



1. An input and control keyboard for use in a calculator comprising:

a mounting panel for mounting keys;

a plurality of keys including function and numeric keys, mounted in the mounting panel, for activating input and control functions, each of said keys having more than two functions assigned thereto;

color-coded legends applied to the mounting panel adjacent to the keys for identifying one of the functions assigned thereto;

a first command key mounted in the mounting panel, having a color-coded body coloration for associating that key with functions identified by correspondingly color-coded legends; and

a command key legend affixed to the first command key for associating that key with the inverse of functions identified by the correspondingly color-coded legends;

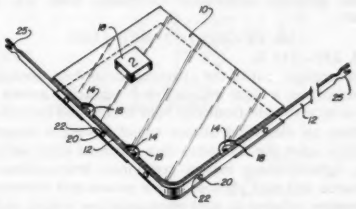
said first command key being manually operable with one of the plurality of keys for designating the inverse of the function identified by the correspondingly color-coded legend assigned to that key.

3,892,959

EDGE-LIGHTED PANEL ARRANGEMENT

Eduard J. Pulles, Huntsville, Ala., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 2, 1973, Ser. No. 412,237
Int. Cl. F21
U.S. Cl. 240—1 EL **7 Claims**



1. In combination, a transparent light-transmitting panel having front and rear surfaces arranged for specular reflection of light therebetween and a marginal portion for receiving

light, said marginal portion being provided with a plurality of spaced openings for receiving light sources and with a plurality of spaced fastening means, a length of flexible material carrying electrical conductor means and having a plurality of complimentary fastener means for fastening with the fastening means on said marginal portion of said panel, a plurality of light sources carried by said length of flexible material and electrically connected with said electrical conductor means so as to be energized when said electrical conductor means is connected to a source of power, said length of flexible material being affixed about said marginal portion of said panel by mating together said fastening means, said plurality of light sources being positioned on said length of flexible material so as to be disposed within said spaced openings when said flexible material is affixed to said panel, whereby edge-lighting for said panel can be provided simply by affixing said flexible material to said panel and coupling the electrical conductor means to a source of power.

3,892,960

LIGHT PROJECTOR FITTINGS

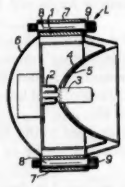
Robert Heritage, Mortlake, England, assignor to Rotaflex (Great Britain) Limited, London, England

Filed Apr. 3, 1974, Ser. No. 457,404

Claims priority, application United Kingdom, Apr. 4, 1973, 16182

Int. Cl. F21v *7/00*

U.S. Cl. 240—41.35 R **3 Claims**



1. A light projector comprising a lamp housing having a body, a source of light, an elliptical reflector, a parabolic reflector, means for mounting said reflectors on said body, at least one of said reflectors being removable from said body, and mounting means permitting the support of supplementary fittings on said body, said mounting means comprising a plurality of extension rods releasably securable to said body to project forwardly therefrom parallel with the common optical axis of said reflectors.

3,892,961

CONTACTLESS POTENTIOMETER WITH AUTOMATICALLY CONTROLLED LIGHT SOURCE

Hans Bachmann, Zug, Switzerland, assignor to Intermadox A.G., Zug, Switzerland

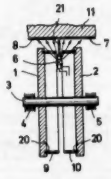
Filed Mar. 19, 1974, Ser. No. 452,550

Claims priority, application Germany, Mar. 21, 1973, 2313997

Int. Cl. G01j *1/32;* **H01l** *15/06*

U.S. Cl. 250—211 K **19 Claims**

5. An arrangement of the character described, comprising, in combination, a light source; photosensitive means positioned to receive light from said light source and operative for generating an electrical output signal having a magnitude dependent upon the luminous flux received from said light source; light-blocking means positioned intermediate said light source and said photosensitive means and mounted for displacement relative to said photosensitive means and said source in a predetermined direction along a predetermined path, the light transmittance of said light-blocking means varying in said predetermined direction, whereby as said light-blocking means is displaced in said direction the luminous flux received by said photosensitive means from said light source will vary accordingly; and compensating means operative for establishing a linear relationship between the displacement of said light-blocking means and the magnitude of said signal by automatically varying the luminous flux emitted from said light source towards said photosensitive means in dependence upon the position of said light-blocking means, wherein said photosensitive means and said signal respectively constitute first photosensitive means and a first signal, and wherein said compensating means comprises second photosensitive means positioned to receive light from said light source and operative for generating a second electrical signal having a magnitude dependent upon the luminous flux received from said light source, and stabilizing circuit means connected to said second



photosensitive means and to said light source, and operative for maintaining constant the magnitude of said second signal by automatically varying the luminous flux emitted by said light source, said light-blocking means constituting first light-blocking means, and wherein said compensating means further includes second light-blocking means positioned intermediate said light source and said second photosensitive means and mounted for displacement relative to said second photosensitive means and said source in a predetermined direction along a predetermined path, said second light-blocking means being coupled to said first lightblocking means for displacement jointly therewith, and the light transmittance of said second light-blocking means varying in the direction in which said second light-blocking means is displaceable.

3,892,962

THERMAL CHAMBER FOR A DEVELOPABILITY REGULATING APPARATUS

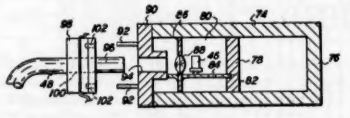
Charles A. Whited, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 295,775, Oct. 6, 1972, Pat. No. 3,817,616.

This application Jan. 30, 1974, Ser. No. 438,126

Int. Cl. G02b *5/14*

U.S. Cl. 250—227 **4 Claims**



1. An apparatus for controlling the thermal environment of a photosensor adapted to detect light rays emitted from a light source, including:

a fiber optic light pipe for transmitting light rays to the photosensor;

an open ended container defining an internal chamber for housing the photosensor;

an end cap having an aperture therein adapted to receive one end portion of said fiber optic light pipe to form therewith a substantially light-tight joint, said end cap being mounted on the open end of said container to form therewith a substantially heat-tight joint;

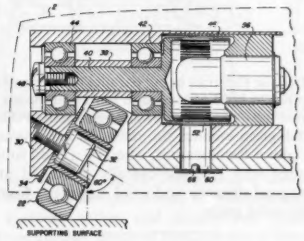
means for heating said container to a predetermined temperature; and

means for controlling said heating means such that said container remains substantially at the predetermined temperature.

3,892,963
TRANSDUCER FOR A DISPLAY-ORIENTED POINTING DEVICE

Jack S. Hawley, Berkeley; Roger D. Bates, Sunnyvale, and Charles P. Thacker, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1973, Ser. No. 426,847
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 R **24 Claims**



16. A position indicator device for electronically representing its positional movement over a supporting surface, comprising:

a housing;

two transducer elements mounted to said housing for converting mechanical motion to electrical signals, said transducer elements comprised of

first shutter means having a plurality of slits spaced from one another about its periphery,

a light source disposed on one side of said first shutter means for generating light to pass through the slits of said first shutter means,

second shutter means disposed concentric with and on the other side of said first shutter means having at least two groups of slits about its periphery, the total number of slits being fewer than said plurality of slits in said first shutter means, for passing light passing through said plurality of slits directed into at least two channels of light upon the coincidence of slits of said plurality and slits of said two groups;

photosensitive means responsive to said channels of light for generating electrical signals respective to each of said channels;

at least two wheels for supporting and moving said housing over the supporting surface,

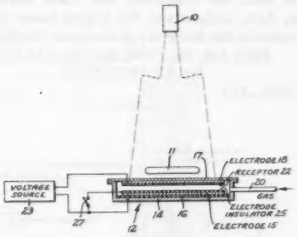
each of said wheels respectively coupled to one of said transducer elements with the horizontal components of the axes of said wheels substantially orthogonal to one another whereby the rotation of one of said coupled wheels represents the X coordinate of movement over the surface and the rotation of the other coupled wheel represents the Y coordinate of movement; and

said first shutter means has a portion of which is disposed in frictional contact with its respective wheel in substantially the same angular relationship with said wheel as said wheel is to the supporting surface such that said first shutter means moves relative to said second shutter means in accordance with the rotation of its respective wheel whereby two sets of signals, each set comprised of respective signals expressed as streams of discrete pulses generated from a respective transducer element, represent the X and Y coordinates of movement, respectively.

3,892,964
INSULATING ELECTRODE FOR BREAKDOWN INHIBITION IN ELECTRONRADIOGRAPHY IMAGING CHAMBER

Eric P. Muntz, Pasadena, and Murray S. Welkowsky, Los Angeles, both of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Continuation of Ser. No. 365,971, June 1, 1973. This application July 12, 1974, Ser. No. 488,147
Int. Cl. G03b *41/16*
U.S. Cl. 250—315 **6 Claims**



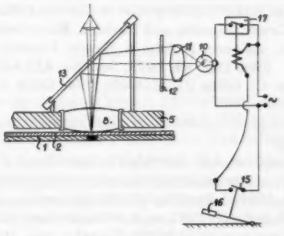
1. In an imaging chamber for an electronradiography system, the chamber having spaced electrodes with a gap therebetween for an ionizable imaging gas which absorbs incoming x-ray photons during an x-ray exposure and produces electrons and positive ions, and an electrostatic charge image receptor sheet at one of the electrodes for receiving one of said types of charged particles and production of a first electrostatic charge image,

the improvement comprising an insulating layer covering the other electrode for collecting the other of said types of charged particles and building up and maintaining an electrostatic charge at the gap surface thereof during the x-ray exposure reducing the magnitude of the accelerating field across the gap, and including means for discharging said charged gap surface of said insulating layer after the x-ray exposure.

3,892,965
MARKING METHOD AND DEVICE

Karl Blattner, Rain 698, Kuttigen, and Roland Picard, Sonnmattstrasse, 923, Romback, both of Switzerland, assignors to Societe Genevoise d'Instruments de Physique, Geneva, Switzerland

Filed Sept. 25, 1973, Ser. No. 400,529
Claims priority, application Switzerland, Nov. 16, 1972, 16713/72
Int. Cl.² G03C *5/16*
U.S. Cl. 250—316 **5 Claims**



1. In a method of marking the positions of points on a drawing which are recorded by means of a coordinate reading device, the improvement comprising superposing the drawing

and heat-sensitive sheet, the upper of the drawing and sheet being transparent to visible light, and projecting the image of an infra-red source onto the heat-sensitive sheet at a point on the drawing which is recorded when said recording is effected, thereby locally to modify the visual appearance of the heat-sensitive sheet to provide a visible record of the points of the drawing that have been recorded.

3,892,966

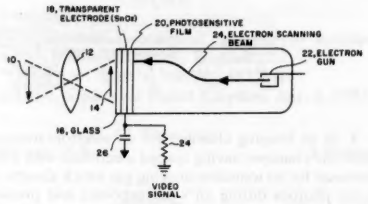
INFRARED VIDICON

Harold R. Riedel, Adelphi; Kurt Peter Scharnhorst, Beltsville, both of Md.; Sol Nudelman, and Hans Roehrig, both of Tucson, Ariz., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 10, 1974, Ser. No. 433,021

Int. Cl. H01j *29/18*

U.S. Cl. 250—333 **2 Claims**



1. A vidicon tube for producing an electronic video signal representative of detected radiation having wavelengths shorter than two microns comprising:

transparent support means disposed along one end of said tube for transmitting said radiation;

transparent electrode means deposited on said transparent support means for conducting said electronic video signal;

a homogeneous layer of amphorous $(Pb_yGe_{1-y})_xTe_{1-x}$ with $0<x<<1$ and $0<y<1$ and x and y selected such that the crystallization temperature of said homogeneous layer is outside the operating temperature of said vidicon tube and said homogeneous layer remains amorphous during operation;

wherein said homogeneous layer is deposited on said transparent electrode means for photoconductively producing said electronic video signal in response to, and representative of, said radiation having wavelengths shorter than two microns transmitted through said transparent support means.

3,892,967

APPARATUS FOR RADIOLOGICAL EXAMINATION OF A SUBJECT THROUGH A SOLID ANGLE

John K. Grady, Lincoln, and David B. Rice, Cambridge, both of Mass., assignors to John K. Grady, Lincoln, Mass.

Filed Dec. 10, 1973, Ser. No. 423,449

Int. Cl. G01n *21/26*; **G01j** *3/34*; **G03b** *41/16*

U.S. Cl. 250—447 **9 Claims**

1. Radiological apparatus for examination of a fixed subject comprising:

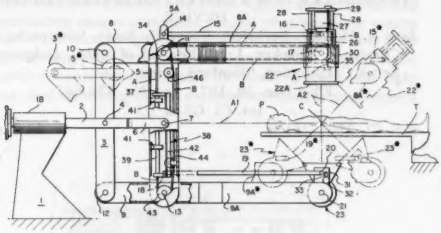
a main support rotor mounted to turn about a central axis;

four pivotally connected members of fixed length forming an angularly adjustable parallelogram, two of the members being pivotally attached transversely of the rotor at locations spaced along the central axis, the other two members having extensions parallel to the central axis beyond the parallelogram;

radiation source means having an axis and attached by a pivot on one extension;

radiation receptor means having an axis and attached by a pivot on the other extension;

first and second links respectively mechanically connected at one end to one transverse member and at the other end to a point spaced from the pivot of one radiation means so as to hold the axes of both radiation means aligned on a common radiation axis through an isocenter on the



central axis, the links being parallel to the central axis and operative to hold at least one radiation means at a fixed distance from the isocenter as adjustment of the rotor and parallelogram inclines the radiation axis through a solid angle about the isocenter, whereby a fixed subject at the isocenter may be radiologically examined at constant radiological distance and axial alignment from throughout the solid angle.

3,892,968

ELECTRON CAPTURE DETECTOR SYSTEMS

James Ephraim Lovelock, Bowerchalke, Salisbury, England

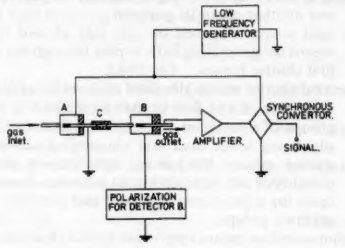
Filed Dec. 4, 1973, Ser. No. 421,615

Continuation of Ser. No. 278,411, Aug. 7, 1972, abandoned.

Claims priority, application United Kingdom, Aug. 6, 1971, 37025/71

Int. Cl. G01t *1/18*

U.S. Cl. 250—389 **3 Claims**



1. An electron capture detector system, for detecting the presence of an electron absorber in a gas sample, comprising in combination:

first and second electron capture detectors electrically insulated the one from the other, said first and second detectors being coupled together in series such that the gas sample flows through the first detector and then through the second detector, said first detector including electrodes for receiving a potential, said second detector including means for producing an output signal, means periodically switching the potential applied across the electrodes of the first detector between minimum and maximum values for modulating the output signal of the second detector in response to presence of an electron absorber in the gas sample, and means for detecting the output signal from the second detector, said second detector including electrodes, said means for producing an output signal including means applying a polarizing potential to said second detector electrodes, said output signal of said second detector being an alternating signal,

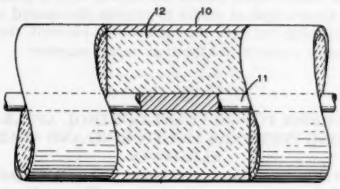
said means for detecting the output signal including a synchronous converter for rectifying said alternating signal from said second detector.

3,892,969

NEUTRON DETECTOR WITH GAMMA COMPENSATED CABLE

Holland D. Warren, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,152
Int. Cl. G01t *3/00*
U.S. Cl. 250—390 **7 Claims**



1. An electrical conductor comprising a sheath having a material that has a low probability for neutron-electron reactions, a leadwire within said sheath, said leadwire being formed from another material that also has a low probability for neutron-electron reactions, said leadwire material also having an atomic number that is larger than the atomic number of the sheath material; in order to generally satisfy the equation

$$O = Z_l^n \, d_l - Z_s^m \, d_s,$$

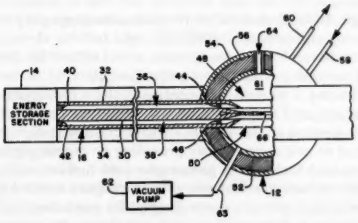
in which l identifies said leadwire, s identifies said sheath, d is a size characteristic, Z is the atomic number, and n and m are exponents that reflect the electron emissivities of said leadwire and said sheath respectively in response to photoelectric and "Compton" phenomena.

3,892,970

RELATIVISTIC ELECTRON BEAM DEVICE

John R. Freeman; James W. Poukey; Steven L. Shope, and Gerold Yonas, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 11, 1974, Ser. No. 478,199
Int. Cl.[2] **G21G** *5/00;* **G01K** *1/08*
U.S. Cl. 250—396 **13 Claims**



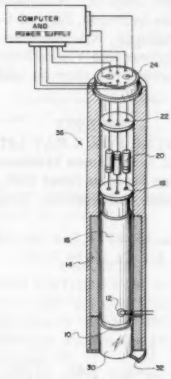
1. An electron beam device comprising first and second cathodes separated from each other by a gap on a common longitudinal axis; means for providing and injecting an anode plasma intermediate said cathodes at said gap along a plane perpendicular to said axis; and means for producing electron beams between said anode plasma and said cathodes.

3,892,971

RADIATION DETECTOR SYSTEM USING AN INORGANIC SCINTILLATOR CRYSTAL DETECTOR WITH AN OPTICAL FILTER FOR AERIAL DOSEMETRY

William E. Arthur, Torrance; Terry E. Carrell, Los Angeles, both of Calif., and Willard Crego, Hudson, Ohio, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 22, 1974, Ser. No. 453,905
Int. Cl. G01t *1/20*
U.S. Cl. 250—361 **5 Claims**



1. A radiation detection system for aerial dosimetry comprising:

an elongated cylindrical detector container having a radiation transparent end window at an input end and an electrical connector at an output end;

a solid inorganic scintillator crystal positioned adjacent said end window wherein said scintillator crystal and said end window are potted to said detector container;

a blue optical filter contiguous with said solid inorganic scintillator crystal; and

a photomultiplier tube surrounded by a lead shield within said detector container and having an input end positioned adjacent said blue optical filter and an output end having electrical leads connected through said electrical connector to dosimetry electronics inside a computer in which radiation emitted from a monitored area near the ground passes through said end window and is incident on said solid inorganic scintillator crystal resulting in residual optical radiation therefrom being filtered and only the initial radiation therefrom being transmitted by said blue filter to said input of the photomultiplier tube for converting to an electrical output signal monitored by said dosimetry electronics.

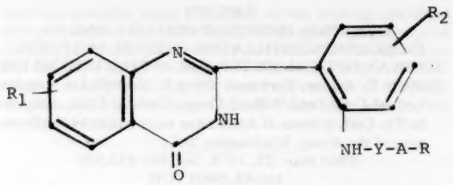
3,892,972

METHOD OF PRODUCING A LUMINESCENT SURFACE CONTAINING SUBSTITUTED SULFONAMIDO AND CARBOXAMIDO PHENYL QUINAZOLONES

Albert Anthony Cevasco, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 119,964, March 1, 1971, Pat. No. 3,740,402. This application Apr. 25, 1973, Ser. No. 354,291
Int. Cl. C09d *11/00*
U.S. Cl. 250—458 **1 Claim**

1. A method for causing a coated surface to fluoresce which comprises, coating said surface with a composition containing a compound of the formula:



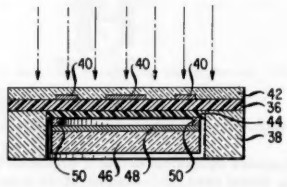
wherein R is hydrogen, alkyl of 1–4 carbons or alkoxy of 1–4 carbons; R_1 and R_2 are hydrogen, alkyl of 1–4 carbons, alkoxy of 1–4 carbons or halogen; A is alkylene of 1–18 carbons, phenylene or naphthylene; and Y is sulfonyl or carbonyl, and thereafter shining exciting radiation on said surface.

3,892,973

MASK STRUCTURE FOR X-RAY LITHOGRAPHY

Gerald Allan Coquin; Juan Ramon Maldonado, both of Berkeley Heights, and Dan Maydan, Short Hills, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 15, 1974, Ser. No. 442,921
Int. Cl. G01n *21/34*
U.S. Cl. 250—505 **9 Claims**



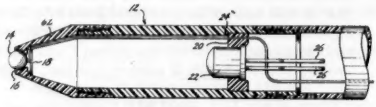
1. In combination in a mask structure, a dimensionally stable support member, an x-ray-transparent heat-treated film stretched over and bonded to said support member, and an x-ray-absorptive pattern disposed on said film.

3,892,974

UNITARY FLEXIBLE CIRCUIT FOR PEN READER

Larry P. Ellefson, and John Renn, both of Seattle, Wash., assignors to Interface Mechanisms, Inc., Seattle, Wash.

Filed Dec. 28, 1973, Ser. No. 429,656
Int. Cl. G01n *21/30*
U.S. Cl. 250—568 **12 Claims**



1. A circuit connection unit for use in an electro-optical reader for bar codes or the like, the reader having a cavity in which is positioned two elements, one element being a light source element and the other element being a light-detector element in a spaced coaxial relationship with a transparent member for focusing light emitted from the light source element on to a document being positioned at one end of said electro-optical reader, comprising in combination:

a plurality of flexible electrically conductive strips;

first means located in the vicinity of one end of the connection unit for connecting one of the elements in a predetermined spaced manner to more than one of said plurality of conductive strips, said first means being shaped so as to substantially conform to said cavity of said reader adjacent the transparent member, and having a configuration such that a substantial portion of light which passes through said transparent member also passes through said first means, said first means, when operatively positioned within said cavity, supporting said one element directly adjacent said transparent member;

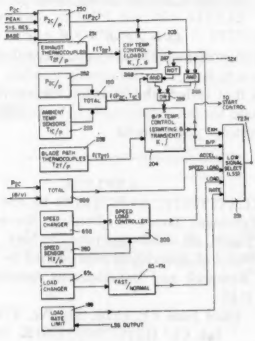
second means spaced away from said first means a specified distance for connecting the other of said elements to more than one of said plurality of conductive strips; and flexible insulating means for maintaining said plurality of electrically conductive strips in a spaced relationship with each other, which circuit connection unit is inserted in the electro-optical reader to provide the spaced coaxial relationship between the light source element, the light-detector element and the transparent member.

3,892,975

GAS TURBINE POWER PLANT CONTROL APPARATUS HAVING IMPROVED MONITORING AND ALARM ELEMENTS

Robert A. Yannone, Aldan, and James J. Shields, Philadelphia, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed June 20, 1973, Ser. No. 371,630
Int. Cl. F02c *9/04*
U.S. Cl. 290—40 **10 Claims**



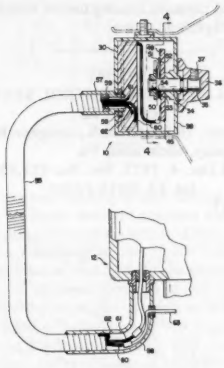
1. A gas turbine electric power plant comprising a gas turbine having compressor, combustion and turbine elements, a generator driven by said gas turbine, a fuel system for supplying fuel to said gas turbine combustion element, a control system having a plurality of control paths with inputs constantly connected to predetermined elements of said turbine and said generator, the output of said control system being connected to and continuously providing an output signal for operating said fuel system to energize said turbine, said control paths including a first plurality of primary control paths for developing a primary control signal for operating said fuel system during turbine startup, load and shutdown operations, and a second plurality of control paths for developing temperature backup control signals, each said backup control signal being a predetermined function of the temperature of a respective one of said turbine elements and at least one other turbine operating condition, said control system including means for selecting one of said backup signals as said control system output under predetermined turbine conditions, and

means for continuously indicating which of said control paths is generating said selected signal.

3,892,976
AUTO THEFT PREVENTION DEVICE

Theodore L. Tsevdos, 28900 Gates Mills Blvd., Pepper Pike, Ohio 44124; Nicholas L. Tsevdos, 1031 W. Hill Mill Dr., Highland Heights, Ohio 44143, and Milton D. Tenenbaum, 3085 Lincoln Heights, Cleveland Heights, Ohio 44118

Filed May 20, 1974, Ser. No. 471,557
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 AT **6 Claims**



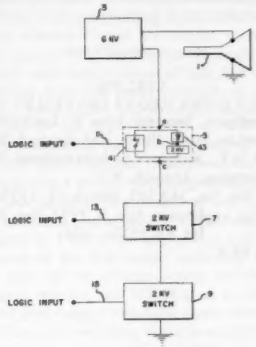
1. In a security system for a motor vehicle electrical circuit including a lock switch assembly electrically connected between two essential circuit elements of said circuit, the improvement which comprises a cable consisting of a plurality of discrete identical insulated conductors including a first group connected between one of said essential circuit elements and said lock switch, a second group connected between the other of said essential circuit elements and said lock switch, and a third group connected to ground whereby if said cable is cut the conductors of said groups are indistinguishable from one another.

3,892,977
SWITCHABLE HIGH VOLTAGE POWER SUPPLY

Meade Goodman Bierly, Elizabethtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 327,273, Jan. 29, 1973, abandoned. This application June 7, 1974, Ser. No. 477,386
Int. Cl. H02j *3/00*
U.S. Cl. 307—77 **6 Claims**

1. A variable high voltage power supply comprising,
first and second voltage sources,
a first switch means including at least one semiconductor for connecting the first voltage source to the load when energized,
a second switch means including at least one semiconductor for connecting the first and second sources in series with the load when energized,
a source of oscillation,
a pair of transformer primary windings,
a pair of switches operative when rendered conductive, to apply the oscillations to the respective windings through unidirectional conducting means,
and control means for rendering one of the switches conductive and simultaneously rendering the other of the switches non-conductive,
the semiconductors of the first and second switch means being each provided with a respective secondary winding

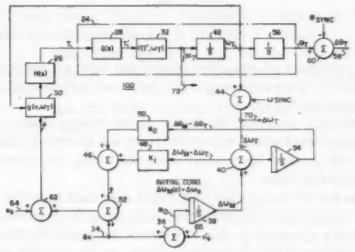


of the transformer connected between their control electrodes to control the energization.

3,892,978
APPARATUS AND METHOD FOR AUTOMATICALLY GUIDING A DRIVEN GENERATOR INTO SYNCHRONIZATION WITH A POWER SYSTEM

Paul H. Haley, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 26, 1974, Ser. No. 464,609
Int. Cl. H02j *3/42*
U.S. Cl. 307—87 **6 Claims**



1. In an electric power plant having a gas turbine driven generator, a control system for operating the turbine and, in particular, for controlling the fuel flow thereto, and a breaker system for connecting the generator to an external power system, apparatus for automatically guiding the generator into synchronization with the external power system, said apparatus comprising:

a. means for sensing at an initializing point when the turbine has reached a predetermined angular velocity which is different than the angular velocity at synchronization;
b. means for determining, responsive to said means for sensing and actuable thereby, a constant acceleration value which will cause any difference in phase angle and angular velocity of the generator at the initializing point and at a projected point of synchronization to simultaneously reach zero;
c. means for generating a control signal comensurate with said determined constant acceleration value and for applying said control signal to the turbine fuel flow control to cause it to accelerate at said determined constant value; and

d. means for generating a breaker actuation signal, coupled to the breaker, when the angular velocity of the turbine becomes equal to the product of said determined constant acceleration value and the time required to close the breaker.

3,892,979

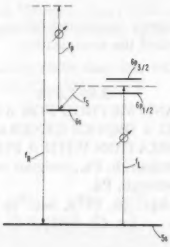
TUNABLE INFRA RED/ULTRAVIOLET LASER

Rodney T. Hodgson, Somers; John R. Lankard, Mahopac; Peter P. Sorokin, White Plains, and James J. Wynne, Montrose, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 343,307, March 21, 1973, Pat. No. 3,816,754. This application Apr. 5, 1974, Ser. No. 458,144

Int. Cl. H02m *5/04*

U.S. Cl. 307—88.3 **4 Claims**



1. A generator of coherent ultraviolet light comprising

a first laser for producing a first beam of radiation at a first frequency f_L,

a nonlinear material having a given energy state above ground level which is connected by a Raman-type process to the ground level, said material being transparent to ultraviolet light,

means for directing said first beam into said material so as to create stimulated Raman scattering at a second frequency f_S equal to the difference between the first frequency and that frequency corresponding to the energy difference between said given energy state and said ground level,

a second laser for producing a beam at a third frequency f_p, frequency f_p corresponding to a higher energy state than that energy state associated with frequency f_L, and

means for directing said first frequency and third frequency beams into said material whereby all said frequencies mix together to produce a fourth frequency f_R in the ultraviolet region, whereby $f_R = f_p + f_L - f_S$.

3,892,980

RELEASABLE SKI BINDING DEVICE

Gary Anderson, 1280 Glen Haven Dr., San Jose, Calif. 95129

Filed Oct. 24, 1973, Ser. No. 409,182

Int. Cl. H01h *35/00*

U.S. Cl. 307—116 **10 Claims**

1. A release system responsive to pressure changes comprising a pressure sensing means capable of transmitting a signal in response to a pressure change, a learning level means for setting a variable pressure release threshold point, said threshold point being based on past signals received from said pressure sensing means, and a release means actuatable by a signal

received from said pressure sensing means which exceeds said pressure release threshold point.

3,892,981

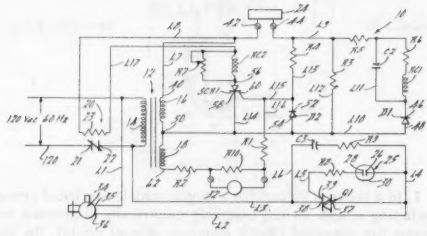
ELECTRICAL PRIMARY CONTROL SYSTEM FOR FURNACES

Frederick T. Bauer, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 4, 1973, Ser. No. 421,557

Int. Cl. H01h *37/00*

U.S. Cl. 307—117 **10 Claims**



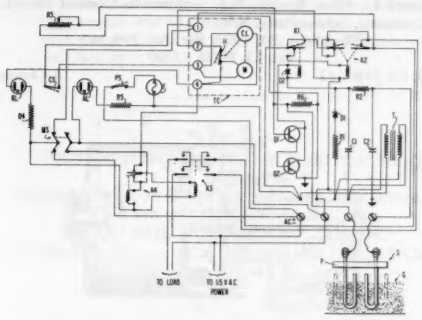
1. In an electrical primary control system for furnaces, the combination including burner control means adapted to be connected to a furnace burner connected to a main line source of AC current, a low voltage control circuit including burner ignition detection means and energy conversion means, means providing a substantially lower voltage than line voltage in said control circuit, means in said low voltage control circuit including solid state means effective to actuate said burner control means in response to a signal from said ignition detection means, electrical switch means controlled by said energy conversion means and effective to interrupt the flow of current through said main line source of AC current, and means including a reed switch interfacing between said low voltage control circuit and said burner control means, said electrical switch means comprising a housing means, a pair of movable spring switch blades carried by said housing means and respectively having contact means normally placed out of contact with each other by the normal bias of said switch blades, a pair of cams rotatably carried by said housing means and being respectively engageable with said switch blades, one of said cams when in one position relative to said housing means being adapted to hold its respective switch blade into electrical contact with the other switch blade to complete an electrical circuit therebetween, the other of said cams when in one position thereof relative to said housing means being adapted to hold its respective switch blade out of contact with the other switch blade even though said one cam is in its said one position thereof to thereby prevent completion of said electrical circuit, a movable actuator means including an actuator carried by said housing means and being adapted to simultaneously engage said cams and move the same to said respective one positions thereof, and latch means for holding said one cam in said one position thereof.

3,892,982

HYDROPONIC NUTRIENT FEEDING CONTROL SYSTEM

Floyd W. Holmes, 7302 Rolliston St., Jacksonville, Fla. 32208

Filed Jan. 29, 1974, Ser. No. 437,688
Int. Cl.[2] A01G 31/00; F16K 21/18
U.S. Cl. 307—118 9 Claims



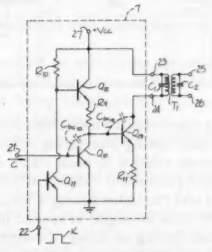
1. In a hydroponic feeding system having a plant bed, container means for liquid nutrient solution and solution forcing means for forcing said solution into said bed, the improvement comprising, in combination: an electrolytic sensor at least partially embedded in said bed for producing current signals representative of moisture content of said bed, a presettable timer means having its output coupled to said solution forcing means for controlling same, and circuit means having its input coupled to said electrolytic sensor and being responsive to signals therefrom for producing at its output a control signal in response to a signal from said electrolytic sensor indicative of a need for nutrient feeding, said circuit having its output coupled to said presettable timer means for supplying its control signal thereto to cause said electrolytic timer means to feed solution to said bed for a preselected time period each time said electrolytic sensor detects a need for nutrient feeding, whereby the initiation of a feeding cycle and its duration are separably and independently controlled.

3,892,983

SWITCHING CIRCUIT

Takashi Okada, and Isa Nakamura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 21, 1973, Ser. No. 399,305
Claims priority, application Japan, Sept. 22, 1972, 47-110349
Int. Cl. H03k 17/60; H03f 1/00
U.S. Cl. 307—254 6 Claims



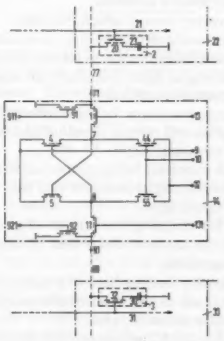
1. A switching circuit for an informational signal comprising: information signal input terminal means; information signal output terminal means; a first semiconductor amplifier device having an input electrode connected to said information signal input terminal means and an output circuit controlled by the information signal applied to said input electrode; switching signal input terminal means to receive a switching signal capable of shifting between an OPEN level and a CLOSED level; a switching semiconductor device having an input electrode and an output circuit controlled thereby; an output load impedance connected in a series circuit between said output circuit of said first semiconductor amplifier device and said output circuit of said switching semiconductor device; first and second voltage supply terminals connected to the opposite ends of said series circuit; circuit means connecting said switching signal input terminal means with said input electrode of said switching semiconductor device including a second switching semiconductor device having an input electrode connected to said switching signal input terminal means and an output circuit controlled by said switching signal to form a low impedance path between said input electrode of the first-named switching semiconductor device and said second voltage supply terminal when said switching signal reaches said OPEN level so that said output circuit of said first-named switching semiconductor device is conductive when said switching signal is at said CLOSED level and non-conductive when said switching signal is at said OPEN level; a second semiconductor ammplifier device having an input electrode and an output circuit connected to said information signal output terminal means and being controlled by the voltage applied to the respective input electrode; and circuit means connecting said input electrode of said second semiconductor amplifier device to said series circuit between said output load impedance and said output circuit of said first semiconductor amplifier device so that said output circuit of the second semiconductor amplifier device is conductive only when said output circuit of said first-named switching semiconductor device is conductive.

3,892,984

REGENERATING CIRCUIT IN THE FORM OF A KEYED FLIP-FLOP

Karl-Ulrich Stein, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Feb. 13, 1974, Ser. No. 442,084
Claims priority, application Germany, Feb. 23, 1973, 2309192
Int. Cl. H03k 3/286, 3/33; G11c 7/00
U.S. Cl. 307—279 7 Claims



1. A regenerating circuit in the form of a keyed flip-flop for binary signals, in particular for the readout signals of integrated single-transistor storage elements forming a storage field in which the single-transistor storage elements are connected over a digit line to the flip-flop, characterized in that the regenerating circuit comprises at least two inverting amplifier stages with feedback, at least one barrier transistor disposed at the signal input between the associated digit line and

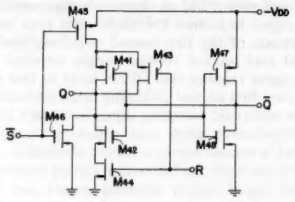
the corresponding amplifier stage, means for selectively effecting a discontinuance of the feedback function and means for selectively adjusting bias potentials at the inputs of the regenerating circuit.

3,892,985

SET-PREFERRING R-S FLIP-FLOP CIRCUIT

Hiroto Kawagoe, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed Mar. 11, 1974, Ser. No. 450,190
Claims priority, application Japan, Mar. 9, 1973, 48-27092
Int. Cl. H03k *3/286, 3/33*
U.S. Cl. 307—279 **10 Claims**



1. A set-preferring R-S flip-flop circuit comprising:

a first inverter circuit which includes

first, third and fifth transistors of the same first conductivity type, each having an input electrode, an output electrode and a control electrode,

second, fourth and sixth transistors, of the same second conductivity type which is opposite to that of said first, third and fifth transistors, each having an input electrode, an output electrode, and a control electrode,

said first and third transistors having their input and output electrodes connected in parallel,

said fifth transistor being connected in series with said parallel-connected first and third transistors between a first power source terminal and a first output terminal;

said sixth transistor being connected in series between said first output terminal and a second power source terminal;

said second and fourth transistors being connected in series between said first output terminal and said second power source terminal;

a second inverter circuit which includes

a seventh transistor of said first conductivity type and an eighth transistor of said second conductivity type, each having an input electrode, an output electrode, and a control electrode;

said seventh transistor being connected in series between a second output terminal and said first power source terminal;

said eighth transistor being connected in series between said second output terminal and said second power source terminal;

first means for coupling the output of said first inverter circuit to the control electrodes of said seventh and eighth transistors;

second means for feeding-back the output of said second inverter circuit to the control electrodes of said first and second transistors; and

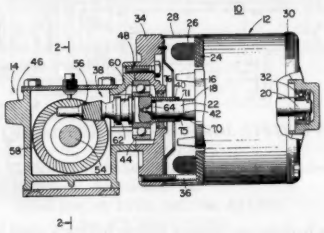
third means for applying a reset input signal to the control electrodes of said third and fourth transistors and a set input signal to the control electrodes of said fifth and sixth transistors, so as to make said flip-flop circuit have a function that when said fifth and sixth transistors are respectively non-conductive and conductive, said flip-flop circuit is in a set state irrespective of the reset input signal, and when said fifth and sixth transistors are respectively conductive and nonconductive, said flip-flop circuit remains in the previous state thereof or is in a reset state in accordance with the conductive or nonconductive state of said third and fourth transistors which operate complementarily.

3,892,986

GEARMOTOR WITH REMOVABLE PINION

Howard G. Allen, Roselle, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,263
Int. Cl. H02k *15/00*
U.S. Cl. 310—42 **4 Claims**



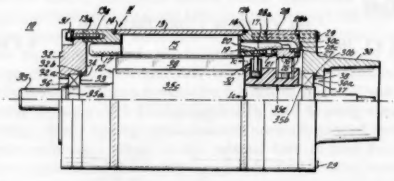
1. A gearmotor assembly including a motor having a stator assembly and a rotor assembly including a shaft having first and second portions; bearing means rotatably supporting said rotor assembly; power transmitting means including an input gear coaxially connected with said shaft; a gear box having output gear means; said input gear meshing with said output gear means; said power transmitting means being assembled with said shaft, and being provided with abutment means adapted for use when removing said power transmitting means from said shaft; said power transmitting means includes a pinion and pinion shaft, and the abutment means comprises a shoulder of greater diameter than said pinion shaft.

3,892,987

COMMUTATING METHOD AND APPARATUS FOR DC PERMANENT MAGNET MACHINES

Samuel Noodleman, Blacksburg, Va., assignor to Kollmorgen Corporation, Hartford, Conn.

Filed Jan. 30, 1974, Ser. No. 437,907
Int. Cl. H02k *37/00*
U.S. Cl. 310—46 **9 Claims**



1. Switching apparatus for a machine responsive to a source of DC power and having interacting rotor and stator assemblies which rotate relative to each other, the rotor having at least a two-pole permanent magnet structure for creating a magnetic field and the stator having a winding with a plurality of energizeable coils arranged at spaced intervals around the stator, said coils having an array of commutator bars associated therewith for supplying electrical power thereto for progressively creating magnetic fields in said stator which interact with those in said rotor, said apparatus comprising:

a. first and second spaced conductive rings associated with said stator, said conductive rings being positioned proximate said commutator bars;

b. means for respectively coupling each of said conductive rings to opposite polarities of said DC source; and

c. first and second actuating means associated with said rotor, said first and second actuating means being adapted to progressively and sequentially electrically couple said first and said conductive rings to the commutator bars during the relative rotation so as to momentarily and progressively couple each coil to both polarities of said source and to couple each subsequent coil across said source before the preceding coil is decoupled from said source.

3,892,988

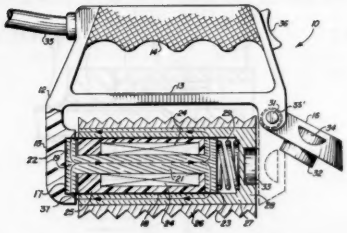
HAND-HELD MULTI-PURPOSE ELECTRIC MEAT TENDERIZER

William M. Gran, 3030 N. 7th St., Phoenix, Ariz. 85014

Filed Feb. 27, 1974, Ser. No. 446,126

Int. Cl.[2] H02K *7/14*; **B25F** *1/00*; **A22C** *9/00*

U.S. Cl. 310—50 **5 Claims**



1. A hand-held electric appliance for producing reciprocating motion of a work head comprising in combination:

a frame defining a handle for holding the appliance by one hand of the user,

a reciprocating work head mounted on said frame,

said work head comprising a sleeve rotatably mounted on said frame,

drive means mounted on said frame for reciprocating said work head,

spring means mounted on said frame for biasing said head against the reciprocating action of said drive means,

said drive means being intermittently connected to said work head and comprising a vibrator,

and means for connecting said vibrator to a source of alternating current,

said vibrator reciprocating said work head longitudinally of the axis of said sleeve,

said frame comprising a pair of spaced bearing means for rotatably mounting the opposite ends of said sleeve,

one of said pair of bearing means being hingedly mounted for pivotal movement to permit the insertion and removal of said sleeve from between said bearing means,

said sleeve being rotated manually by the user moving the appliance along a surface while said sleeve is vibrated longitudinally of its longitudinal axis.

3,892,989

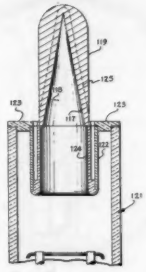
CONVERGENT FLOW HOLLOW BEAM X-RAY GUN CONSTRUCTION

Nicholas M. Gralenski, Aptos; George Wada, Palo Alto, and David J. Bates, Los Altos, all of Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif.

Division of Ser. No. 122,065, March 8, 1971, Pat. No. 3,751,701. This application May 9, 1973, Ser. No. 358,667The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.

Int. Cl. H01j *35/14*, *35/30*

U.S. Cl. 313—59 **4 Claims**



1. In an X-ray generating device of a type employing an evacuated enclosure and a target of material disposed therein to be struck by high energy electrons to develop X-rays, the improvement comprising a cathode having an electron-emitting portion adapted to be charged negatively with respect to said target to create an annular, hollow beam of electrons for impinging upon said target, said target being formed with a closed conical surface, said surface converging in a direction leading away from said cathode, means responsive to a potential applied thereto for focusing said beam onto said surface, a control element and means coupled to said control element for continuously varying the potential thereof to cause said flow of electrons to cause said annular beam to impinge upon said surface with a varying diameter in response to variations in said potential of the last named means, and a window formed to pass X-rays out of said enclosure axially of said beam.

3,892,990

BROMINE-QUENCHED HIGH TEMPERATURE G-M TUBE WITH PASSIVATED CATHODE

Nicolas Mitrofanov, Cleveland, Ohio, assignor to Kewanee Oil Company, Bryn Mawr, Pa.

Filed July 31, 1972, Ser. No. 276,693

Int. Cl. H01j *9/38*

U.S. Cl. 313—93 **4 Claims**

1. In a method for increasing the high temperature operability of a Geiger-Mueller counter, comprising a relatively large surface area cathode sealingly confined in a chamber, wherein said chamber is filled with a halogen gas containing saturation gas and subjected to an electrical discharge to cause said halogen to be absorbed by said cathode surface, wherein said gaseous material is purged from said chamber and replaced with a sealing gas including at least some of said halogen gas, the improvement consisting of electro-depositing a coating of chromium, platinum, or a predominantly nickel-containing alloy less than about 1 mil thick upon said cathode surface, contacting said coating with an oxygen-containing gas, saturating the cathode surface with halogen gas until the saturation end-point is reached, purging the saturation gas, filling said chamber with a sealing mixture containing said halogen gas, pressurizing said chamber to a pressure in the range from about 100 to 500 mm. Hg. abs., reading the starting voltage, repeating said pressurizing of said chamber over a period of

several days and reading the starting voltage after each repressurization until the starting voltage read is essentially constant, and then sealing said chamber so as to provide a passivated cathode surface and to extend the operating life of said counter.

3,892,991

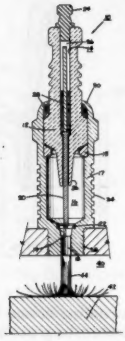
STRATICHARGE INJECTOR SPARK PLUG

Don C. Joslyn, 4732 Millcove Dr., Orlando, Fla. 32809

Filed July 1, 1974, Ser. No. 484,713

Int. Cl.[2] H01T *13/20*

U.S. Cl. 313—138 **9 Claims**



1. A spark plug comprising;

an insulating member;

a precombustion chamber communicating with one end of the said insulating member, said precombustion chamber including an elongated, substantially cylindrical orifice extending therefrom, said orifice having a sufficient length so as to provide a concentrated, narrow flame injection therefrom during operation of said spark plug, a ground electrode about the junction between said chamber and said orifice; and

an electrode rod extending centrally through said member and said precombustion chamber, said rod bearing closest to said precombustion chamber adjacent said ground electrode.

3,892,992

COLOUR PICTURE TUBES

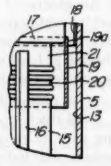
Tomic Ishizuka, Mobara-shi, Japan, assignor to Hitachi, Ltd., Japan

Continuation of Ser. No. 591,331, Nov. 1, 1966, which is a continuation-in-part of Ser. No. 514,577, Dec. 17, 1965, abandoned. This application Aug. 1, 1968, Ser. No. 756,338

Claims priority, application Japan, Dec. 21, 1964, 39-2364; Jan. 14, 1966, 41-98316

Int. Cl. H01j *29/02, 29/56*

U.S. Cl. 313—414 **7 Claims**



1. A color picture tube comprising an envelope having a neck portion, three electron guns embraced in said neck portion of said picture tube for generating respective electron beams, each of said electron guns including a plurality of focusing grid electrodes supported with an interstice therebetween to form an electric focusing lens for a respective one of said electron beams, electro-conductive shielding plate means surrounding each interstice of said electric focusing lens and overlapping the opposing end portions of said focusing grid electrodes, means for supporting said electro-conductive shielding plate means so as to collectively and substantially surround all three electron guns as a group and be disposed out of direct contact with said tube neck portion, said electro-conductive shielding plate means uniformly having the same potential as that of one of said focusing grid electrodes thereby effectively electrostatically shielding said opposing end portions of said focusing grid electrodes and said interstice therebetween from said tube neck portion of said picture tube.

3,892,993

HIGH PRESSURE DISCHARGE LAMP

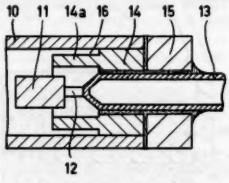
Abraham Timmermans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 22, 1974, Ser. No. 435,534

Claims priority, application Netherlands, Feb. 16, 1973, 7302172

Int. Cl. H01j *5/48, 5/50*

U.S. Cl. 313—318 **7 Claims**



1. A high-pressure discharge lamp having a first electrode and a second electrode and an elongated cylindrical discharge tube having a filling which comprises a metal, said discharge tube having a wall which consists primarily of ceramic material, the first electrode being disposed at a first end of the discharge tube and the second electrode being disposed at a second end of the discharge tube, a wall defining a compartment between at least one of the electrodes and the adjacent end of the discharge tube, the compartment being in fluid communication with the part of the discharge tube in which the discharge is effected, said wall screening at least part of an adjacent electrode from the interior of said compartment, wherein the portion of wall of the compartment screening at least part of the electrode is made of ceramic material, said wall constituting a part of an entirely ceramic member which is secured to the wall of the discharge tube in a gastight manner.

3,892,994

VIDICON CAMERA TUBE WITH INTERNAL LIGHT SOURCE FOR SETTING DARK CURRENT LEVEL

Hans Scholz, Essex, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Filed May 13, 1974, Ser. No. 469,323

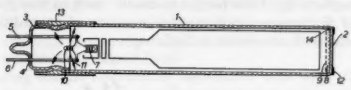
Claims priority, application United Kingdom, June 23, 1973, 29933/73

Int. Cl.[2] H01J *29/45, 31/28*

U.S. Cl. 313—371 **9 Claims**

1. A camera tube of the vidicon type comprising an envelope, closed at one end to form the face of the tube, which includes a sidewall, the face of the tube, and a portion joining said sidewall and said face; a light source within said envelope

for emitting light which is conducted via said sidewall and said portion to said face; a target disposed between said light source and said face and sufficiently close to said face so that some of the light is conducted into said face to illuminate the target and cause a small quiescent current to flow therein while some of the light is reflected at said portion of the envelope tending to impinge directly on the target and produce non-uniform illumination thereof; and suppression means provided at said portion for reducing the internal reflection which produces direct impingement of light on said target so as to result in a more uniform illumination of the target and to cause a more uniform quiescent current to flow therein.

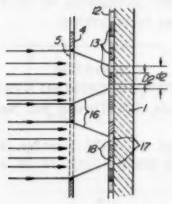


3,892,995

POST-DEFLECTION ACCELERATION TYPE COLOR PICTURE TUBE

Eiichi Yamazaki, Ichihara, Japan, assignor to Hitachi, Ltd., Japan

Filed Sept. 16, 1970, Ser. No. 72,758
Claims priority, application Japan, Oct. 1, 1969, 44-77770
Int. Cl. H01j *29/32, 31/20*
U.S. Cl. 313—408 **2 Claims**



1. In a post-deflection acceleration type color picture tube including a glass bulb having a panel portion, a funnel portion and a neck portion, a phosphor screen disposed on the inner surface of a face plate of said panel portion, and a color selective electrode disposed just in front of said phosphor screen inside said glass bulb, the improvement comprising said phosphor screen being provided with phosphor dots which are smaller in diameter than the diameter of the focussed electron beams reaching said phosphor screen, wherein gaps between the adjacent phosphor dots on said phosphor screen are filled up with a non-luminescent black substance, and wherein the post-deflection accelerating voltage ratio between said phosphor screen and said color selective electrode is 1.5 – 3.0.

3,892,996

SELF-CONVERGING COLOR TELEVISION DISPLAY SYSTEM

Albert Maxwell Morrell, Lancaster, Pa.; William Henry Barkow, Pennsauken, and Josef Gross, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 217,780, Jan. 14, 1972, abandoned. This application June 29, 1973, Ser. No. 374,831
Int. Cl. H01j *29/66, 29/76, 31/20*
U.S. Cl. 313—413 **20 Claims**

1. A color television display system, comprising:

a color television picture tube including a face-plate having deposited thereon groups of three different color phosphor elements forming a viewing screen, an electron beam gun assembly for producing three horizontal in-line electron beams lying in a plane substantially normal to said viewing screen and an aperture mask including a plurality of apertures in registry with said groups of phosphor elements, said electron beam gun assembly being selected for producing said three beams along three generaliy convergent lines extending toward the center of said viewing screen; and

a deflection yoke comprising vertical and horizontal deflection coils disposed around said picture tube between said mask and said gun assembly for deflecting said beams for forming a raster on said viewing screen, the winding distribution of said deflection coils being selected for producing vertical positive isotropic astigmatism and negative horizontal isotropic astigmatism such that said beams are overconverged at the ends of the vertical axis of the raster and underconverged at the ends of the horizontal axis thereof;

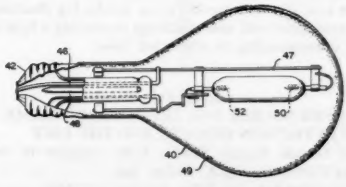
said electron beam gun assembly including beam forming members for producing a spacing not greater than 0.200 inches between adjacent ones of said beams meaured in a plan located halfway between the ends of said yoke when said beams are substantially at the center of said screen.

3,892,997

ARC DISCHARGE LAMP FOR PRODUCING CONTROLLED ENERGY SPECTRUM

Luke Thorington, Berkeley Heights, and Louis J. Parascandola, North Bergen, both of N.J., assignors to Duro-Test Corporation, Fair Lawn, N.J.

Division of Ser. No. 37,433, May 14, 1970, Pat. No. 3,670,193, which is a continuation of Ser. No. 654,148, July 18, 1967, abandoned. This application Mar. 27, 1972, Ser. No. 238,325
Int. Cl. H01j *61/44*
U.S. Cl. 313—487 **10 Claims**



1. A high pressure arc discharge lamp for operation from a source of voltage comprising an envelope, a pair of electrodes for connection to said source of voltage and an ionizable material within said envelope, said electrodes and ionizable material producing an arc discharge which emits energy in both the visible light and ultraviolet range, and means interacting with the energy emitted by the arc discharge to modify the energy such that ultraviolet energy is transmitted through

the envelope in the middle range and near range respectively of between about 6 to 50 and 150 to 700 microwatts per lumen of the visible light transmitted through the envelope and with a radiant power ratio of near ultraviolet/middle ultraviolet in a range of between about 8 to 40.

3,892,998

GAS DISCHARGE DEVICE FOR MULTICOLOR INFORMATION DISPLAY

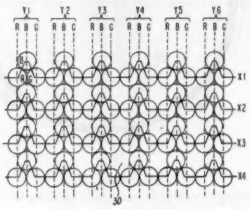
Frank Tsui, and Katherine Tsui, both of Boeblingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1973, Ser. No. 410,009

Claims priority, application Germany, Oct. 25, 1972, 2252256

Int. Cl. H01j *61/08, 61/40, 1/74*

U.S. Cl. 313—487 **6 Claims**



1. A gas discharge device for a multicolor information display having a gas composition within a discharge chamber which can be excited into illumination by means of ionization, wherein

the opposing sides of said discharge chamber include first and second arrays of substantially parallel conductors,

said conductor arrays being disposed at an angle relative to each other,

the crossover points of respective conductors of said first and second arrays defining coordinate discharge cells, the improvement wherein

a single discharge chamber is provided for exciting the light emission for all basic colors and combinations thereof,

wherein the conductors of said first array are divided into associated groups of three conductors,

each of said three conductors being suitable for exciting one of three adjacent cells in one of the three basic colors, said second conductor array comprising a plurality of individual parallel conductors connected in a meandering configuration through the cells of associated groups of conductors, the coincident energization of a conductor from said first and second array producing discharge of the associated cell, said discharge producing a light emission corresponding to a selected color.

3,892,999

POWER SOURCE FOR ELECTRONIC FLAME DETECTION DEVICES AND THE LIKE

Bianchini Gianni, Reggio Emilia, Italy, assignor to Societa Italiana Elettronica S.p.A., Milan, Italy

Filed Feb. 13, 1974, Ser. No. 442,105

Claims priority, application Italy, May 22, 1973, 24390/73

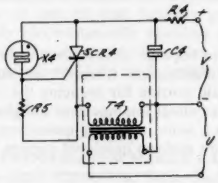
Int. Cl. H05b *41/36*

U.S. Cl. 315—149 **6 Claims**

1. In an electronic flame detection device, having normally non-conducting ionization tube means, said tube means forming an ionization discharge therein responsive to the presence of an externally generated quantum of ultraviolet radiations within said tube means, a circuit for the polarization of said tube means comprising:

a source of direct current voltage having an output level chosen to lie between the level of spontaneous ignition of said tube means and the minimum triggering voltage of said tube means;

current limiting means coupled between said source and said tube means for rapidly extinguishing the discharge within said tube means due to ionization, thereby allowing a plurality of discharges to occur, each of said plurality of discharges signifying the presence of an additional quantum of ultraviolet radiations;



energy storage means coupled to said source for storing energy and adapted to be charged to a constant voltage; and means coupled to said storage means and said tube means for transferring the electrical energy stored by said storage means to an output line when said tube is ignited; the characteristics of said transfer means and said energy storage means being selected so as to prevent substantial parasitic periodic oscillations of the voltage across said tube means after its triggering.

3,893,000

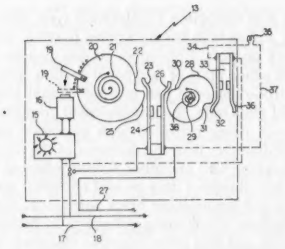
HIGHWAY LIGHTING SYSTEM

John Francis Guercio, 306 Throop St., North Babylon, N.Y. 11704

Filed Sept. 17, 1973, Ser. No. 397,933

Int. Cl. H05b *37/02, 39/04, 41/36*

U.S. Cl. 315—159 **2 Claims**



1. A highway lighting system for lighting a predetermined length of a highway for a predetermined time in response to the flow of trafic on said highway comprising:

a plurality of highway lights spaced sequentially apart from each other by a predetermined distance along said highway,

circuit means connecting each of said highway lights in parallel electrical circuits,

power supply means including a first conductor electrically connected in said circuit means to each of said highway lights and a second conductor,

switch means connected between said circuit means and said second conductor and normally in an inactivated condition whereby said highway lights are normally off,

trip means operatively associated with said switch means and responsive to the passage of a vehicle past a predetermined point on said highway to activate said switch

means to electrically connect said circuit means and said second conductor to turn on said highway lights, said trip means including an electric eye electrically connected to an electromagnet and being responsive to passage of a vehicle in front of said predetermined point to activate said electromagnet, cam means having an armature thereon attractable by said electromagnet when said electromagnet is activated and said switch means being operatively associated with said cam means and being activatable thereby when said armature is attracted to said electromagnet, and

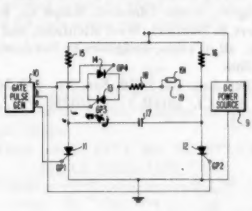
timing means operatively associated with said trip means and said switch means for maintaining said switch means activated for a predetermined time after the passage of said vehicle beyond said predetermined point, said timing means including spring clock means connected to said cam means for maintaining said switch means activated a predetermined time after said armature is attracted to said electromagnet.

3,893,001

PULSED POWER SUPPLY CIRCUIT FOR A LIGHT-EMITTING DISCHARGE TUBE

Tomoyuki Isono, and Tetsuo Ohmiya, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Dec. 19, 1973, Ser. No. 426,171
Claims priority, application Japan, Dec. 26, 1972, 47-693
Int. Cl. H05b *41/24*
U.S. Cl. 315—287 **3 Claims**



1. A pulsed power supply circuit for intermittently energizing a light emitting discharge tube, comprising:

first circuit means including first and second SCR's connected in parallel and first and second resistors connected respectively in series with said first and second SCR's, said first circuit means being connected to a DC power source;

second circuit means including third and fourth SCR's connected in parallel with their polarities reversed, said second circuit means being connected in series with said discharge tube between said first and second SCR's;

means for alternately triggering said first and second SCR's; a capaciter connected between said first and second SCR's; and

means for alternately triggering said third and fourth SCR's a predetermined time after the triggering of said first and second SCR's, respectively, thereby establishing an energizing circuit for said discharge tube.

3,893,002

SWITCH-CONTROLLED CONTINUOUSLY PROGRESSIVE DIMMER CIRCUIT

John Peter Woodnutt, 119 Cleveland St., London, England

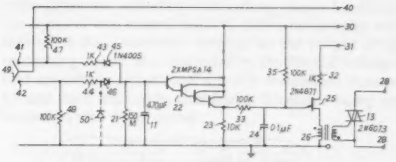
Filed Feb. 19, 1974, Ser. No. 443,387
Claims priority, application United Kingdom, Feb. 21, 1973, 8562/73
Int. Cl. H05b *37/02, 39/04*
U.S. Cl. 315—291 **15 Claims**

1. A dimmer circuit comprising:

output power control means adapted for connection in a power supply circuit of a lamp;

a storage capacitor;

conversion means connected to said storage capacitor and to said output power control means to cause said output power control means to set the power available to a lamp in whose power supply circuit the output power control means is connected, to a level dependent on te potential across said storage capacitor; and



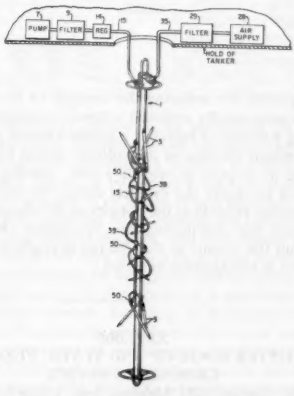
manually-operable switch controlled charge-varying means connected to said storage capacitor and operable in a first mode to allow the charge on said storage capacitor to remain unaltered and in a second mode to cause progressive and continuous alteration of said charge at such a rate as to enable a user to progressively and continuously vary the brightness of said lamp to a required level by employing said second mode of operation and then to retain said level by switching to said first mode.

3,893,003

METHOD FOR REDUCING THE STRENGTH OF ELECTROSTATIC FIELDS IN AN OIL TANKER

Julian H. Dancy, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,803
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 R **12 Claims**

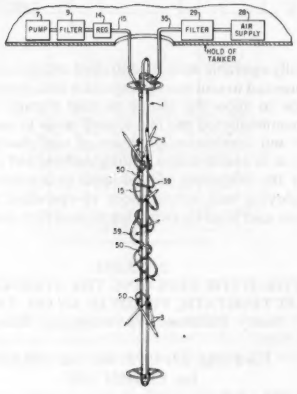


1. A method for reducing the strength of an electrostatic field in a substantially empty enclosed volume, which comprises the following steps of providing a supply of liquid at a predetermined pressure at a predetermined location in the substantially enclosed volume, converting the liquid to droplets to provide a mist, utilizing the electrostatic field to charge the droplets during the converting step to an opposite polarity to the polarity of the electrostatic field, and distributing the oppositely charged mist throughout the substantially enclosed volume so that the net strength of the electrostatic field is substantially reduced.

3,893,004
APPARATUS FOR REDUCING THE STRENGTH OF ELECTROSTATIC FIELDS IN AN OIL TANKER

Julian H. Dancy, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,801
Int. Cl. H05f 3/00
U.S. Cl. 317—2 R 10 Claims



1. Apparatus for reducing the strength of an electrostatic field in a substantially enclosed volume comprising means for providing a supply of liquid at a predetermined pressure at a predetermined location in the volume, means for converting the liquid to droplets to provide a mist, utilizing the electrostatic field to charge the droplets during the converting step to an opposite polarity to the polarity of the electrostatic field, and means for distributing the oppositely charged mist throughout the volume so that the net strength of the electrostatic field is substantially reduced.

3,893,005
HELICOPTER HOOK-UP AND STATIC ELECTRICITY GROUNDING DEVICE

Joseph G. Corbin, 5251 Alabama Ave., Camp Le Jeune, N.C. 28542

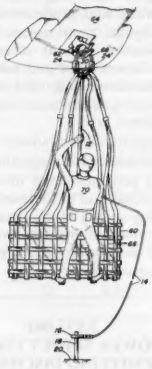
Filed June 27, 1974, Ser. No. 483,498
Int. Cl.[2] H05F 3/02
U.S. Cl. 317—2 E 10 Claims

1. Grounded pole means for attaching a donut to an elevated hook, said donut having straps from a load-carrying sling coupled to it, comprising, in combination:

a hollow pole made from electrically non-conductive material and having top and bottom ends;

hook-up means attached to the pole at its top end for holding said donut and placing it on said helicopter hook, said hook-up means being made from electrically conductive material;

grounding means, attached to the pole at its bottom end, for grounding electrical discharges; and

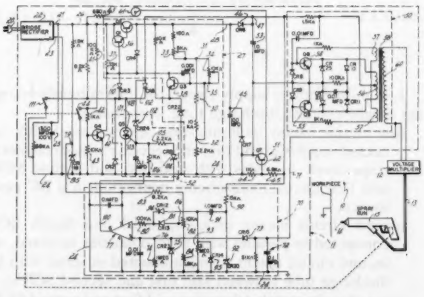


electrical connection means forming a conductive path between said hook-up means and said grounding means.

3,893,006
HIGH VOLTAGE POWER SUPPLY WITH OVERCURRENT PROTECTION

Harvey R. Algeri, North Olmsted; Ralph G. Bruening, Amherst; Robert E. Sandorf, West Richfield, and Fred A. Stillwell, Elyria, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Jan. 14, 1974, Ser. No. 433,262
Int. Cl.[2] B05B 5/02; H02H 7/122
U.S. Cl. 317—3 7 Claims



2. A power supply for producing a very high DC voltage for application to a probe of an electrostatic spray gun from which electrostatically charged coating material is sprayed onto a directly electrically grounded object comprising, in combination:

a source of unregulated DC power including an output power lead and a common ground lead, said power lead having an unregulated voltage thereat relative to said common ground lead,

a voltage regulator circuit with a two wire power input, a control input and an output, one input wire of said regulator input being connected to said power lead and the other input wire of said series regulator being connected to said common ground lead, said voltage regulator circuit producing a regulated DC voltage at its output relative to said common ground lead when said control input is at a voltage higher than at said ground lead, said regula-

tor including a turnoff means responsive to an externally generated turnoff signal applied to said control input for turning off said regulator thereby removing said DC voltage from said regulator output;

an inverter circuit with a two wire input and a two wire output, one said inverter circuit input wire is connected to said regulator output and the other inverter circuit input wire is connected to said common ground lead, said inverter circuit producing at its two wire output an intermediate AC voltage at a high frequency;

a voltage multiplier circuit with a two wire input and a single wire output, said two wire input of said voltage multiplier is connected to said inverter circuit two wire output, said voltage multiplier produces at its single wire output a very high DC voltage which is electrically connected to the spray gun probe for electrostatically charging coating material sprayed onto a directly electrically grounded object;

an overcurrent detector connected between one said input wire of said voltage multiplier circuit and said common ground lead to monitor ground return current from said voltage multiplier, said overcurrent detector producing an overcurrent signal at its output when the current flow from the voltage multiplier circuit to said common ground lead exceeds a predetermined selectable maximum value;

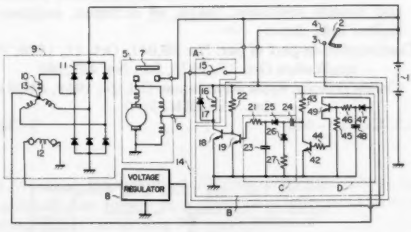
a power supply shutdown switch activated in response to said overcurrent signal for simultaneously a) generating and applying said turnoff signal to said turnoff means to thereby turnoff said regulator and b) short circuiting to said common ground lead said regulator output and said inverter circuit input to thereby inhibit power transfer from said DC source to said multiplier.

3,893,007

VEHICLE STARTER PROTECTIVE SYSTEM

Kazumasa Mori, Aichi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed July 6, 1973, Ser. No. 377,033
Int. Cl. H02h *3/00, 7/00*
U.S. Cl. 317—9 B **2 Claims**



1. A vehicle starter protective system operative in combination with an AC generator in a vehicle comprising:

a starter,

a battery positioned in said vehicle,

a key switch connected to said battery,

a starter relay having a relay coil and relay contacts positioned between said starter and said key switch,

a digital-to-analog converter means connected to said AC voltage generator for receiving the AC voltage generated by said AC generator for converting said AC voltage to a variable DC voltage,

switching means including a first and second transistor connected in a Schmidt trigger configuration for operating said starter relay in accordance with the output of said digital-to-analog converter, wherein said digital-to-analog converter includes

a capacitor charged in response to the voltage generated by said AC generator, said voltage having a frequency corresponding to the rotational rate of the rotor of said AC generator, and

a resistor connected between said capacitor and the base terminal of said first transistor of said switching means, said capacitor and said resistor forming a delay means for maintaining the on-state of said first transistor for a fixed period of time after the rotational rate of said rotor falls below a predetermined level, and

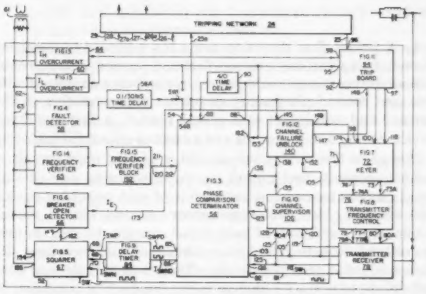
a pulse generator connected between said digital-to-analog converter and the neutral point of said AC generator, said pulse generator including a smoothing circuit for filtering the signal of said neutral point to derive the average value thereof, a third transistor coupled to the output of said smoothing circuit and controlled by the filtered voltage of said smoothing circuit, and a fourth transistor connected to said third transistor, said fourth transistor being connected to said delay circuit.

3,893,008

SEGREGATED PHASE COMPARISON RELAYING APPARATUS

William A. Strickland, Jr., Livingston, and Walter L. Hinman, Jr., New Providence, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 295,031, Oct. 4, 1972, abandoned.
This application Oct. 2, 1973, Ser. No. 402,687
Int. Cl. H02h *7/26, 3/28*
U.S. Cl. 317—27 R **29 Claims**



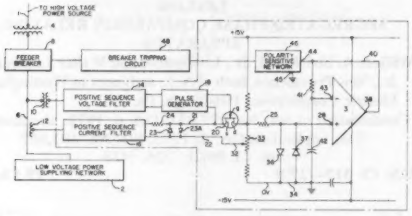
1. Protective relay apparatus for protecting an n phase alternating potential transmission line having n phase conductors, said apparatus comprising a breaker actuating network having n input means, an individual breaker controlling network for each of said n input means of said actuating network, said controlling networks being individually associated with said phase conductors, each of said controlling networks including a conductor fault sensing device and a current sensing device connected to be associated with the phase conductor with which said controlling network is associated, each of said controlling networks including an intelligence handling device, each of said intelligence devices having an intelligence receiving portion and an intelligence transmitting portion, each said network including first circuit means interconnecting its said fault sensing device between its said current sensing device and with its said intelligence handling device, said first circuit means being effective in the absence of the sensing of a conductor fault by its associated said fault sensing device to actuate its associated said transmitter portion to establish a transmitted guard signal, each said controlling network including a phase comparing portion and a second circuit means interconnecting its associated said comparing portion to its said current sensing device and said receiving portion of its said intelligence handling device, each said receiving portion being effective to provide a pulsing signal to its associated said comparing portion through its associated said second circuit means when receiving a remote pulsing input signal and to provide a remote guard signal to its associated said

controlling network when its said receiving portion is receiving a remote guard signal, each of said current sensing device being effective to energize its associated said comparing network with a local pulsing input signal through its associated said second circuit means, each said controlling network being effective to render its said comparing portion ineffective to actuate its associated said breaker actuating network when its said receiving portion is supplying its said remote guard signal.

3,893,009
REVERSE POWER FLOW RELAY

John D. Watson, Bognor Regis, England, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 16, 1974, Ser. No. 433,957
Int. Cl. H02h *3/26, 3/38*
U.S. Cl. 317—43 **10 Claims**



1. A power flow direction relay for a power transmitting circuit, said relay comprising: first and second input circuits and an output circuit, said input circuits being energized with first and second alternating quantities representative of the current and voltage in said power circuit, a first switching device having a main circuit and a control circuit for initiating a change in the conductive condition of said main circuit, a pulse generator, first circuit means connecting one of said input circuits to said control circuit of said switching device and including said pulse generator, second circuit means connecting the other of said input circuits to said output circuit and including said main circuit of said switching device, said pulse generator being effective to actuate said control circuit to initiate a change in the conductive condition of said main circuit solely during a predetermined time interval in degrees of the one alternating quantity which energizes said one input circuit,

said output circuit including a high gain amplifier and a feedback circuit, said feedback circuit including a timing network, said timing network comprising a primarily reactive device and a primarily resistive device, said timing network having a time constant substantially greater than said predetermined time interval, said second circuit means connecting said other input circuit through said main circuit of said switching device to the input of said amplifier.

3,893,010
SAMPLING SYSTEM FOR PROCESSING TEXTILE MATERIAL IN A WET CONDITION

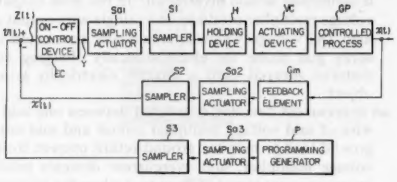
Kazutomo Ishizawa, Osaka; Takahuni Akashi, Kyoto, and Sadao Otake, Kobe, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Japan

Continuation of Ser. No. 232,390, March 7, 1972, which is a continuation-in-part of Ser. No. 859,825, Sept. 22, 1969, abandoned. This application Nov. 6, 1973, Ser. No. 413,311
Claims priority, application Japan, Sept. 24, 1968, 43-68518; Sept. 24, 1968, 43-68520; Sept. 24, 1968, 43-68521
Int. Cl.[2] G05B *21/02;* **D06P** *1/00*
U.S. Cl. 318—636 **5 Claims**

1. A system for controlling the temperature of a treating liquid in a dyeing process in accordance with a predetermined trapezoidal temperature control program which contains a temperature rising, a temperature constant level and a temperature lowering program, for dyeing textile material by the treating liquid comprising:

sampling the actual temperature of the treating liquid in order to detect the difference between the actual temperature of the liquid and the temperature represented by the predetermined trapezoidal temperature control program;

holding an output signal of an on-off control device produced in response to the detected difference for a holding



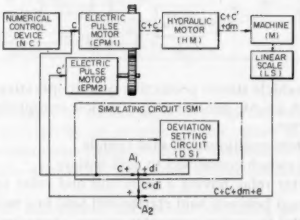
time by a zero-order holding device within each sampling cyclic period so that the input of the thermal exchanging medium to the dyeing process is held until said holding by said zero-order holding device is almost completed;

and changing said holding time within each sampling cylic period in accordance with predetermined exchanging programs for respective temperature rising, constant level and lowering programs of the predetermined trapezoidal temperature control program while maintaining the magnitude of said input of said thermal exchanging medium at a constant level during each holding period.

3,893,011
NUMERICAL CONTROL SYSTEM CONTROLLING A MACHINE AND PROVIDED WITH A SYSTEM FOR COMPENSATING A POSITION-ERROR IN THE NUMERICAL CONTROL OF THE MACHINE

Seiuemon Inaba; Kanryo Shimizu, both of Kawasaki; Yoshihiro Hashimoto, Yokohama; Hiroshi Usami, Kawasaki, and Youichi Amemiya, Tokyo, all of Japan, assignors to Fujitsu Ltd., Japan

Continuation-in-part of Ser. No. 80,041, Oct. 12, 1970. This application Oct. 17, 1973, Ser. No. 407,286
Claims priority, application Japan, Oct. 24, 1969, 44-85138
Int. Cl. G05b *19/40*
U.S. Cl. 318—685 **5 Claims**



1. A position-error compensated numerical control system for a controlled member of a machine, which comprises:

a numerical control device for developing command pulses;

an electro-hydraulic stepping motor responsive to said command pulses for developing torques to position the controlled member of the machine in response to said command pulses;

means for measuring the amount of movement of the controlled member;

simulating circuit means connected to said numerical control device and receptive of said command pulses for developing output pulses simulating a lag error which causes a delay between the development of said command pulses by said numerical control device and the resultant movement of the controlled member;

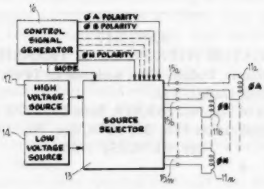
compensating pulse generating means cooperative with said measuring means and said numerical control device for generating compensating pulses representative of the difference between the measured amount of movement of the controlled member measured by said measuring means and an amount of movement represented by the output pulses developed by said simulating circuit means; and

feedback means receptive of said compensating pulses and cooperative with said electrohydraulic stepping motor for reducing said difference to zero.

3,893,012
STEPPING MOTOR DRIVE CIRCUIT

Frank W. Lin, San Jose, Calif., assignor to Qume Corporation, Hayward, Calif.

Filed July 5, 1974, Ser. No. 486,150
Int. Cl.² H02k *37/00*
U.S. Cl. 318—696 **10 Claims**



1. An apparatus for supplying a relatively high voltage and a relatively low voltage to a plurality of associated devices, said apparatus comprising the combination of:

a source of relatively high voltage;

a source of relatively low voltage;

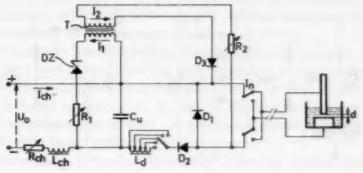
a control signal generator for generating a mode control signal and a plurality of pairs of polarity control signals; and

a source selector having a plurality of control signal input terminals individually coupled to different ones of control signals generated by said control signal generator, a pair of voltage input terminals respectively coupled to said source of relatively high voltage and said source of relatively low voltage, and a plurality of pairs of voltage output terminals for alternately coupling said high voltage source and said low voltage source to said plurality of pairs of voltage output terminals in response to the receipt of said mode control signal from said control signal generator, the polarity of the voltage present on said output voltage terminals being determined by said polarity control signals coupled to said source selector from said control signal generator.

3,893,013
ELECTRIC DISCHARGE MACHINING CIRCUIT INCORPORATING MEANS FOR PRE-IGNITION OF THE DISCHARGE CHANNEL

Nicolas Mironoff, Mies, Switzerland, assignor to Bovard & Cie, Bern, Switzerland

Filed May 29, 1973, Ser. No. 364,640
Claims priority, application Switzerland, June 1, 1972, 8090/72; Oct. 25, 1972, 15429/72
Int. Cl. B23k *9/06;* **H03k** *3/72*
U.S. Cl. 320—1 **11 Claims**



1. An electrical discharge machining circuit for generating and automatically applying recurrent erosive pulses across a machining gap defined by an electrode tool and a workpiece, comprising an electrical circuit incorporating:

electric energy accumulator means for recurrently storing electrical energy and discharging such electrical energy across said machining gap in the form of erosive current pulses via a conductive circuit,

said electrical energy accumulator means including a capacitor coupled in parallel with the machining gap for recurrently storing electrical energy and returning said stored electrical energy to the machining gap, which capacitor has a voltage which increases and decreases correlatively with said stored electrical energy,

pre-ignition voltage delivering circuit means connected in circuit with said electric energy accumulator means and including voltage threshold means coupled to said capacitor and responsive to the voltage thereon, and inductive transformer means having a primary winding and a secondary winding, said primary winding being coupled to said voltage threshold means and to said capacitor for causing a current to pass through said primary winding only when said voltage of said capacitor reaches a predetermined value in relation to said voltage threshold means and said current in said primary winding causing a voltage to appear across said secondary winding, and

diode means coupled between said machining gap and said capacitor for applying across said machining gap the higher of two voltages, the one of which is a voltage delivered only from said capacitor via said conductive circuit and fed to said gap without passing through said secondary winding as a main erosive pulse voltage, and the other of which is a voltage delivered at least from said secondary winding as a pre-ignition voltage.

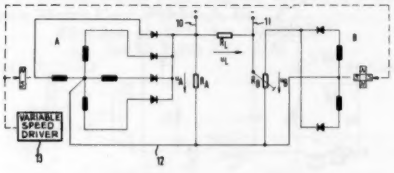
3,893,014
SYSTEM FOR SUBSTANTIALLY ELIMINATING THE FUNDAMENTAL AND HARMONICS OF A RIPPLE VOLTAGE OR CURRENT

Jan Vacek, Bonndorf, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 20, 1974, Ser. No. 471,249
Claims priority, application Germany, May 23, 1973, 2326239
Int. Cl.² H02M *1/12*
U.S. Cl. 321—9 R **7 Claims**

1. An arrangement for generating a speed-dependent D.C. voltage without substantial ripple, said arrangement comprising: a first voltage generator for producing an A.C. output voltage; first rectifier means connected with said first genera-

tor to rectify the said A.C. output voltage thereof; a second generator coupled to said first generator for producing an A.C. output voltage in frequency and phase synchronism with that of said first generator; second rectifier means connected with said second generator to rectify the A.C. output voltage thereof; and a pair of output leads, said first and second rectifier means and said first and second generators being connected together and to said output leads in a manner such that



said generators and said rectifier means are connected in a series circuit that substantially reduces the ripple appearing at the output of said first rectifier means, the said A.C. voltage generators being rotatable, one of which has a two-phase stator winding and a two-pole permanent magnet rotor, while the other has a single-phase stator winding and a four-pole permanent magnet rotor, said rotors being rigidly coupled together in such a manner that the maximum values of said first and second generator output voltages are in phase.

3,893,015

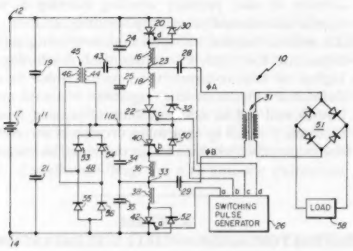
FORCED VOLTAGE SHARING IN SERIES-CONNECTED POWER INVERTERS

Thomas A. Weil, Wellesley, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 3, 1975, Ser. No. 538,282

Int. Cl.[2] H02M *7/00*

U.S. Cl. 321—27 R **13 Claims**



1. In combination, a source of direct current, first and second inverters, each inverter having a DC input and an AC output, said inverters connected in series with each other and said source of direct current, means for providing a sample of the AC output of one of said inverters, means for rectifying said sample to a direct current output, and means for feeding said direct current output to augment the DC input of the other inverter when the DC input of one inverter departs from a predetermined balance with respect to the other.

3,893,016

THYRISTOR CHOPPER CIRCUIT

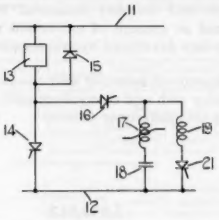
Ivor Carl Rohsler, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 14, 1974, Ser. No. 451,066

Claims priority, application United Kingdom, Apr. 6, 1973, 16490/73

Int. Cl. H02m *7/52*

U.S. Cl. 321—45 C **1 Claim**



1. A thyristor chopper circuit comprising in combination first and second d.c. supply lines, a load and a main thyristor connected in series across the supply lines, a second thyristor, a first inductor and a capacitor connected in series across the main thyristor, and a second inductor and a third thyristor connected in series across the series combination of the first inductor and capacitor, firing of the second thyristor commutating the main thyristor and charging the capacitor, and firing of the third thyristor reversing the charge on the capacitor, said first inductor having a saturable core but the second inductor having no core.

3,893,017

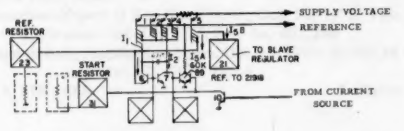
REGULATOR WITH BIPOLAR TRANSISTORS

Clark R. Williams, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 263,819, June 19, 1972, abandoned. This application Feb. 20, 1974, Ser. No. 444,233

Int. Cl.[2] G05F *1/56*

U.S. Cl. 323—4 **8 Claims**



1. A reference bias regulator for a current source comprising:

a. a reference portion having a first bipolar transistor means of one type connected in emitter-collector series with a reference resistor between first and second reference nodes;

b. a differential regulator portion having second and third bipolar transistor means of said one type and fourth and fifth bipolar transistor means of the opposite type, resistance means and capacitance means, the bases of said transistor means of like types being connected together, the emitters of said transistor means of said one type being connected together and through said resistance means to the first reference node and the emitter of said fourth transistor means being connected to the second reference node, the collectors of said second and fourth transistor means being connected together and to one terminal of said capacitance means; the collectors of said third and fifth transistor means being connected together and to the bases of said fourth and fifth transistor means and to the other terminal of said capacitance means and

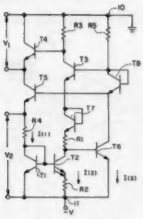
the emitter of said fifth transistor means being connected to the junction of said reference resistor and said first transistor means; and

c. a drive portion having a sixth bipolar transistor means of said opposite type, the base of said sixth transistor means being connected to the collector of said second and fourth transistor means and the emitter of said sixth transistor means being connected to said second reference node.

3,893,018
COMPENSATED ELECTRONIC VOLTAGE SOURCE

Robert R. Marley, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Dec. 20, 1973, Ser. No. 426,968
Int. Cl. G05f *5/00*
U.S. Cl. 323—19 **24 Claims**



1. A voltage regulator circuit having first and second voltage input terminals for connection across an unregulated direct current voltage source including in combination:

first transistor circuit means coupled with said first and second voltage input terminals and having an output terminal supplying a voltage having a predetermined positive temperature coefficient;

a shunt regulator transistor with emitter, base and collector electrodes, the emitter thereof coupled with said second input terminal and the base thereof coupled with the output terminal of said first transistor circuit means;

first diode means;

first resistance means coupled with said first diode means at a first junction in a series circuit, in the order named, between said first input terminal and the output terminal of said first transistor circuit means;

compensating means coupled between said first junction and the collector of said shunt regulator transistor for offsetting variations of the voltage across the base-emitter junction of said shunt regulator transistor with variations in the voltage appearing on said second input terminal; and

output circuit means including an output transistor having base, collector and emitter electrodes, the base thereof coupled with the collector of said shunt regulator transistor, the collector thereof coupled with said first voltage input terminal and the emitter thereof coupled with said second voltage input terminal.

3,893,019
VARIABLE POWER CONTROL ADAPTER

John A. King, and Donald L. Brown, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 10,088, Feb. 16, 1970, abandoned, which is a continuation of Ser. No. 615,948, Feb. 14, 1967, abandoned. This application July 9, 1971, Ser. No. 161,945
Int. Cl. G05f *3/04*; **H05b** *39/04*
U.S. Cl. 323—19 **2 Claims**

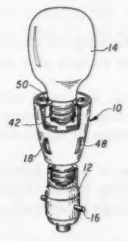
1. An adjustable power control device of the type adapted to threadably engage a conventional electric lamp socket to which a source of electrical power is connectable for enabling the magnitude of the electrical power provided to an electric lamp to be selectively varied, said power control device comprising:

a generally tubular housing of electrically insulating material and having upper and lower ends, said housing being provided with a plurality of circumferentially spaced elongated slots therethrough arranged intermediate the ends of the housing and extending lengthwise thereof,

a stationary support plate fixedly secured within said housing intermediate the ends thereof and defining a transverse partition within said housing disposed above the elongated slots therein, said support plate being provided with a plurality of radially spaced ventilating slots therethrough arranged between the central portion and the periphery of the support plate,

an externally threaded base member fixedly secured to the lower end of said housing and providing a male connector for threadably connecting the control device to the electric lamp socket so as to enable the control device to be coupled to the source of electrical power through the electric lamp socket,

an internally threaded upwardly opening socket member fixedly secured within said housing to the central portion of said support plate and disposed radially inwardly with respect to the housing wall and the ventilating slots in said support plate, said internally threaded socket member and said housing wall cooperating to define an annular passageway therebetween in registration with said ventilating slots, said internally threaded socket member providing a female connector for threadably receiving the electric lamp so as to enable the electric lamp to be coupled to the source of electrical power through the control device,



a manually adjustable electric control circuit fixedly secured within said housing to the central portion of said support plate in depending relation therefrom, said electric control circuit being disposed within said housing at a location in registration with the elongated slots in said housing, said electric control circuit being electrically interconnected between said base member and said socket member to provide electrical coupling therebetween and being selectively adjustable for varying the magnitude of the electrical power to be provided to the electric lamp,

a thumbwheel mounted within said housing for rotation with respect thereto about an axis transverse to the longitudinal extent of said housing, said thumbwheel being located in registration with one of the elongated slots in said housing and including a portion thereof protruding outwardly of said housing through said one elongated slot to enable the position of said thumbwheel to be manually adjusted.

means coupling said electric control circuit to said thumbwheel such that said electric control circuit is responsive to the rotation of said thumbwheel to vary the electrically conductive state of said electric control circuit for enabling the magnitude of the electrical power provided to the electric lamp to be selectively varied, and

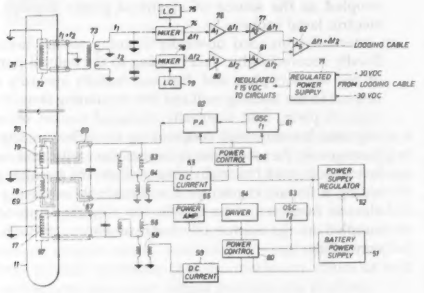
said elongated slots in said housing, said ventilating slots in said support plate, and said annular passageway defined between the housing wall and the radially inwardly disposed socket member cooperating to provide an unimpeded path for air flow extending through said housing supplying ventilation for said electric control circuit.

3,893,020

DUAL RADIO FREQUENCY APPARATUS FOR DETERMINING ELECTROMAGNETIC CHARACTERISTICS OF EARTH FORMATIONS USING CONSTANT FLUX FIELD GENERATORS

Richard A. Meador, and Larry W. Thompson, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,899
Int. Cl. G01v *3/10, 3/18*
U.S. Cl. 324—6 **15 Claims**



1. A system for determining the electromagnetic characteristics of materials in the vicinity of a well borehole, comprising:

means for generating, in a well borehole, a first, lower frequency, alternating electromagnetic field at a radio frequency in the range of approximately 10 to 20 megahertz;

means for generating, in a well borehole, a second, higher frequency alternating electromagnetic field at a radio frequency in the range of approximately 20 to 40 megahertz;

means for stabilizing the total electromagnetic flux emitted by said means for generating said first and second alternating electromagnetic fields to a constant value;

means for detecting, in a well borehole, at a longitudinally spaced distance from the locations where said first and second alternating electromagnetic fields are generated, the voltage amplitudes of the total electromagnetic field at said first and second frequencies and generating signals representative of said total field voltage amplitudes of the total electromagnetic field at said first and second frequencies; and

means for recording said total field amplitude signals as a function of borehole depth.

3,893,021

DUAL RADIO FREQUENCY METHOD FOR DETERMINING DIELECTRIC AND CONDUCTIVITY PROPERTIES OF EARTH FORMATIONS USING NORMALIZED MEASUREMENTS

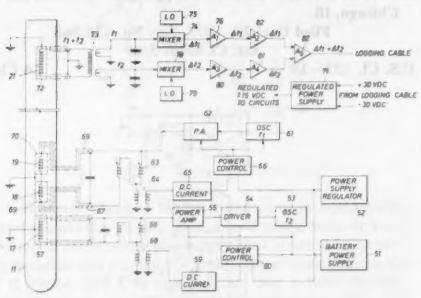
Richard A. Meador, Houston, and Richard H. Arnold, Sugarland, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 27, 1973, Ser. No. 391,898
Int. Cl. G01v *3/10, 3/18*
U.S. Cl. 324—6 **9 Claims**

1. A method for determining the resistivity and dielectric characteristics of materials in the vicinity of a well borehole, comprising the steps of:

generating, in a homogeneous medium outside a well borehole, first and second frequency alternating electromagnetic fields, said first alternating electromagnetic field at a radio frequency in the range of 10 to 20 megahertz and said second alternating electromagnetic field at a radio frequency in the range of approximately 20 to 40 megahertz, said second frequency being a non-integer multiple of said first frequency;

detecting, in a homogeneous medium outside a well borehole at a longitudinally spaced distance from the location where said first and second alternating electromagnetic fields are generated the voltage amplitudes of the total



electromagnetic field at said first and second frequencies and generating first and second normalization signals representative thereof whose amplitudes are defined to be unity;

repeating said generating and detecting steps at said first and second frequencies at a plurality of depth levels in a well borehole and generating at each such depth level first and second total field voltage amplitude signals representative of the normalized relative amplitudes of the total field at said first and second frequencies with respect to said first and second normalization signals; and

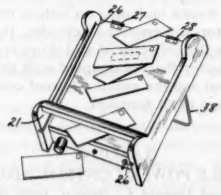
recording said first and second representative total field signals as a function of borehole depth.

3,893,022

SEALED ENVELOPE EXAMINING DEVICE FOR DETECTING THE PRESENCE OF METAL

Herbert S. Kulik, and Jacob Schachter, both of 100 Richfield Ln., Hauppauge, N.Y.

Filed Feb. 28, 1974, Ser. No. 446,698
Int. Cl. G01r *33/00*
U.S. Cl. 324—41 **2 Claims**



1. A sealed envelope examining device comprising: a base element forming a housing, a metal-sensitive oscillating detector circuit at least partially disposed within said housing, said circuit including first and second coils developing an electromagnetic field therebetween and an alarm device; said base element including a planar upper wall and a pair of side walls on either side thereof, a bridge structure supported by portions of said walls and extending over said upper wall to define

an interstice therebetween for the passage of an envelope therethrough, one of said coils being supported by said bridge structure, the other of said coils being supported by said base element on opposite sides of said interstice; a slideable drawer element supported by said base element and passing beneath said bridge structure, and a pivotally mounted cover element selectively overlying said base element and having means maintaining said drawer element against movement when said cover element is in overlying position.

3,893,023

MAGNETIC BUBBLE DEVICE FOR VISUALIZING MAGNETIC FIELD PATTERNS

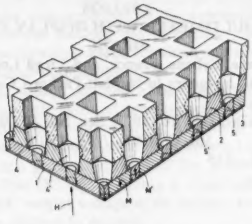
Matti Niilo Tapani Otala, Oulu, Finland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,544

Claims priority, application Netherlands, Feb. 12, 1973, 7301931

Int. Cl. G01r *33/02*

U.S. Cl. 324—43 R **7 Claims**



1. A device for visualizing magnetic field patterns, comprising a first layer of a magnetizable material having a uniaxial magnetic anisotropy, which layer is magnetized in a direction normal to the plane of the layer under the influence of a second layer of a permanent magnetic material juxtaposed one side of the first layer, the first layer comprising a periodic structure of magnetic domains the direction of magnetization of which is opposite to the direction of magnetization of the remainder of the first layer, said second layer comprising a means for maintaining the magnetic domains fixed in said periodic structure, and a magneto-optical detection means for irradiating the first layer with a beam of linearly polarized light and for analyzing the direction of polarization of the resulting beam from said first layer.

3,893,024

METHOD AND APPARATUS FOR FAULT TESTING MULTIPLE STAGE NETWORKS

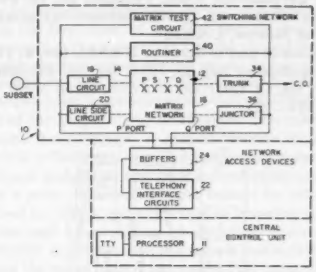
Jose Reines, Glen Ellyn; Eric G. Platt, Westmont; Stanley E. White, Crestwood; Joseph M. Corrado, and Askold W. Wawryszyn, both of Chicago, all of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,031

Int. Cl. G01r *31/02;* **H04m** *3/26*

U.S. Cl. 324—51 **9 Claims**

1. An apparatus for testing the individual switching members of a multiple stage switching network of the type in which the network is responsive to marking signals at points at the ends of the network for completing a path serially through the stages of said network between the marked points and in which a plurality of possible paths exist between each set of marked end points and said paths are distributed through at least one stage in said network; the invention comprising means responsive to a test indication for marking a first end point at one end of said network and a second end point at the opposed end of the network, means for disabling all possible paths but one through said one stage between said marked first and second endpoints, means to enable a single path between said marked first and second end points and means responsive to the successful completion of said single path



between said first and second endpoints for initiating successive tests of remaining paths between the marked first and second points and means for indicating failure of completion of a path.

3,893,025

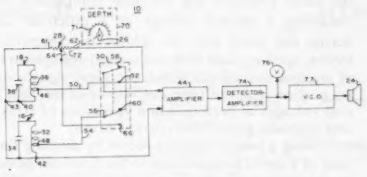
APPARATUS FOR DETERMINING THE DISTANCE TO A CONCEALED CONDUCTIVE STRUCTURE

Thomas G. Humphreys, Jr., Birmingham, Ala., assignor to George G. Plosser, Birmingham, Ala.

Filed Feb. 1, 1974, Ser. No. 438,939

Int. Cl. G01r *19/16;* **G01v** *3/08*

U.S. Cl. 324—67 **10 Claims**



1. A locator for determining the distance to a concealed conductive object lying along a known direction and wherein the object is radiating an alternating current signal, said locator comprising:

first and second signal receptors, each being adapted to receive said signal and provide an output voltage in proportion to the level of said signal as received;

support means for positioning said receptors a selected and fixed distance apart whereby one receptor may be positioned a selected distance greater than the other from said object;

signal combining means, including adjustment means, coupled to the outputs of said receptors for adjustably combining said outputs in a subtractive mode and providing a combined signal output which is reducible to a substantially zero level as a function of setting of said adjustment means;

detection means responsive to the output of said signal combining means for indicating when said combined signal output is at a substantially zero level; and

depth indication means coupled to said signal combining means and responsive to adjustment of said adjustment means and the distance apart of said receptor for indicating the distance to a concealed conductive object.

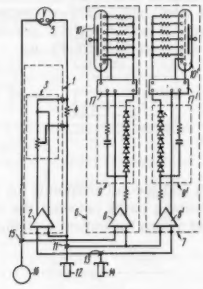
3,893,026
METHOD AND APPARATUS FOR MEASURING ELECTROCHEMICAL POTENTIAL DIFFERENCE BETWEEN A METALLIC STRUCTURE AND EARTH

Vsevolod Ivanovich Glazkov, 5 Sokolinaya ul., 18, kv. 38; Viktor Gerasimovich Kotik, Flotskaya ul., 18, kv. 96, and German Mikhailovich Gunin, Shebashevsky proezd, 8, kv. 91, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 204,822, Dec. 6, 1972. This application July 23, 1974, Ser. No. 491,056

Int. Cl. G01r *19/00, 31/00;* **G01n** *27/00*

U.S. Cl. 324—72 **3 Claims**



1. A method of measuring an electrochemical potential difference arising between a metal structure in contact with earth and an earth point in the presence of stray currents and cathodic protection currents, comprising: placing two comparison electrodes in the earth, a main comparison electrode being located at said earth point and an additional comparison electrode at a point more remote from the metal structure;

obtaining a first voltage as a potential difference between the metal structure and the main comparison electrode; obtaining a second voltage as a potential difference across the main and the additional comparison electrodes; applying said first and second voltages to the input of an analogue device which produces signals varying in proportion with the time derivatives of the first and second voltages at periods when variations of stray current and cathodic protection current occur;

determining a proportionality factor by dividing the magnitude of a signal proportional to the first voltage derivative by the magnitude of a signal proportional to the second voltage derivative; injecting said second voltage into the input of a corrector unit; adjusting said corrector unit so as to produce an output voltage whose magnitude divided by the input voltage magnitude equals said proportionality factor;

applying said first voltage between the metal structure and the main electrode to a voltmeter in antiphase with said voltage obtained at the output of the corrector unit;

whereby, the result of the measurement of an electrochemical potential difference is read directly off the voltmeter scale.

3,893,027
ELECTRICAL TEST PROBE

Cornelis Teunis Veenendaal, Cornelius, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed June 10, 1974, Ser. No. 477,711

Int. Cl. G01r *31/02*

U.S. Cl. 324—72.5 **4 Claims**

1. An electrical test probe, comprising:

an insulative body including a substantially tubular stationary member and a member disposed in internesting relationship therewith so that said body is adapted for extended and contractional dispositions;

a conductive member disposed in said body;

a plurality of probe tips disposed in said body and in contact with said conductive member, said plurality of tips including a first tip adapted to be extendible in the contractional disposition of said probe body and a second tip adapted to be extendible in the extended disposition of said probe body; and

control means for selectively extending and retracting said tips relative to said body, said control means including a sleeve member operatively connected to said movable member for selectively extending said tips by longitudinal and rotational movement thereof.

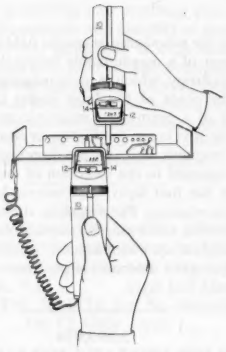
3,893,028
PROBE MULTIMETER WITH DISPLAY INVERTING MEANS

Paul F. Febvre, Eybens, France, and Virgil Lee Laing, Loveland, Colo., assignors to Hewlett-Packard Company, Loveland, Colo.

Filed Oct. 16, 1973, Ser. No. 407,019

Int. Cl. G01r *1/08, 15/08*

U.S. Cl. 324—115 **6 Claims**



1. Electrical signal measuring apparatus comprising:

display means for visually displaying character information indicative of a measurement result, said display means comprising one or more character positions;

switch means for selecting either an upright or an inverted display mode of operation;

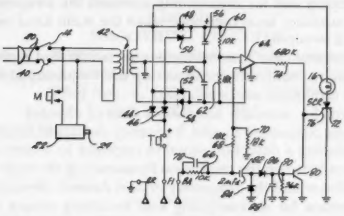
first logic means coupled to said display means and switch means, said first logic means being responsive to selection of the inverted display mode of operation for reflecting upright character information associated with each of said character positions about a central one of said character positions; and

second logic means coupled to said display means, switch means, and first logic means, said second logic means being responsive to selection of the inverted display mode of operation for reflecting upright character information associated with each of said character positions about a central portion of each respective character position.

3,893,029
AUTOMOBILE ALTERNATOR TESTER

Richard R. Vensel, 45329 6th St., E., and Jerry A. Leach, 45800 N. 10th St., E., both of Lancaster, Calif. 93534

Filed Mar. 25, 1974, Ser. No. 454,125
Int. Cl. G01r *31/02, 19/16*
U.S. Cl. 324—158 MG **6 Claims**



1. A test device for testing an automobile three-phase alternator or the like independently of the automobile electrical system and without loading the alternator, the alternator having a ground terminal, a field terminal, and a battery terminal, the test device comprising:

a DC voltage source adapted to be connected to the field terminal and the ground terminal of the alternator to energize the field winding of the alternator,

a first circuit means adapted to be connected to the battery terminal and ground terminal of the alternator for producing a first DC signal having a magnitude that varies with the DC output voltage at the battery terminal of the alternator relative to ground,

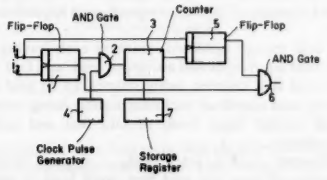
a second circuit means adapted to be connected to the battery terminal and the ground terminal of the alternator for producing a second DC signal having a magnitude that varies with the AC output voltage at the battery terminal relative to ground, and

binary indicator means responsive to the magnitudes of the first and second signals for indicating when both the first signal is above a first predetermined magnitude and the second is simultaneously below a second predetermined magnitude.

3,893,030
COINCIDENCE MEASURING CIRCUIT FOR INDICATING TIME INTERVALS

Klaus Brandenburg, Hamburg, and Jurgen Schwake, Schenefeld, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 83,016, Oct. 22, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,569
Claims priority, application Germany, Oct. 24, 1969, 1953737
Int. Cl. G04f *9/00*
U.S. Cl. 324—181 **4 Claims**

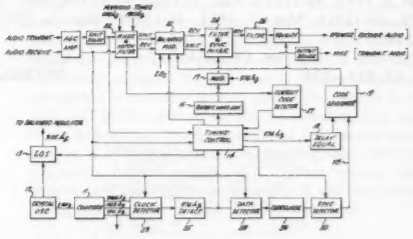


1. A coincidence measuring circuit for indicating the time interval between the pulses of two separate periodic pulse trains i_1 and i_2 having dissimilar frequencies F1 and F2, comprising a first bistable multivibrator triggerable to a first stable state in response to a pulse on a first input thereof and triggerable to a second stable state in response to a pulse on a second input thereof for providing an output signal level on a first output thereof in response to the first stable state and for providing an output level on a second output thereof in response to the second stable state, means connecting the pulse train i_1 to the first input of the first bistable multivibrator, means connecting the pulse train i_2 to the second input of the first bistable multivibrator, timing means connected to the first output of the first bistable multivibrator for providing a timing output pulse a predetermined delay interval after the initiation of the output signal level on the first output of the first bistable multivibrator, a second bistable multivibrator triggerable to a first stable state in response to a pulse on a first input thereof and triggerable to a second stable state in response to a pulse on a second input thereof for providing an output level on a first output thereof in response to the first stable state and for providing an output level on a second output thereof in response to the second stable state, means connecting the pulse train i_1 and to the first input of the second bistable multivibrator, means connecting the output of the timing means to the second input of the second bistable multivibrator, and a coincidence gate having inputs connected to the second output of the first bistable multivibrator and to the first output of the second bistable multivibrator for providing a coincidence output signal indicating that the period between a pulse of the pulse train i_1 and the next following pulse of the pulse train i_2 was less than the delay interval of the timing means.

3,893,031
SYNCHRONIZATION SYSTEM FOR VOICE PRIVACY UNIT

Henrie L. Majeau; Neil W. Heckt, both of Bellevue, and Jack L. May, Redmond, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 8, 1972, Ser. No. 304,843
Int. Cl. H04k *1/00;* **H04l** *7/00*
U.S. Cl. 325—32 **11 Claims**



1. In combination, an apparatus for synchronizing the initiation of enciphering/deciphering of communication signals between two or more communication stations, comprising:

a transmitter portion, which includes:

means for generating a first signal of known frequency;

means for generating a Barker word digital signal;

means for modulating said first signal with said Barker word digital signal, thereby producing a first modulated signal;

means operative at the conclusion of said Barker word digital signal for initiating the enciphering of communication signals generated at one communication station to produce enciphered communication signals;

means for combining said first signal with said enciphered communication signals for as long as the communication signals are enciphered, thereby providing a continuous indication of enciphered communication, said first signal combined with said enciphered communication signals defining a first combined signal;

means for transmitting said first modulated signal and said first combined signal in sequence, such that said first modulated signal is transmitted to another communication station substantially immediately prior to transmission of said combined signal to said another communication station;

a receiver portion, which includes:

means for receiving said first modulated signal and said combined signal from said one communication station;

means for detecting the first signal, said first signal providing a continuous indication of enciphered communication between communication stations;

means for recovering said Barker word digital signal from said first modulated signal;

means for correlating bit-by-bit said recovered Barker word digital signal with a replica of said Barker word digital signal;

means responsive to said correlator means for generating a summation signal which is proportional in magnitude to the number of correct correlations between said detected Barker word digital signal and said replica;

means for generating a reference signal having a first predetermined magnitude;

means for comparing said reference signal with said summation signal; and,

means for initiating deciphering of the enciphered communication signals at the conclusion of correlation if the magnitude of said summation signal is greater than said first predetermined magnitude.

3,893,032

CHANNEL SELECTION DEVICE

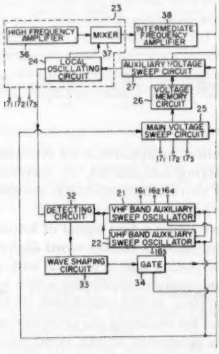
Yoichi Sakamoto, Toyonaka, and Yukio Koyanagi, Suita, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 22, 1971, Ser. No. 210,876

Claims priority, application Japan, Dec. 28, 1970, 45-124784; Dec. 28, 1970, 45-124776; Dec. 28, 1970, 45-124780; Dec. 28, 1970, 45-124782; Dec. 28, 1970, 45-124775; Dec. 28, 1970, 45-124781; Dec. 28, 1970, 45-124783; Dec. 28, 1970, 45-124774; Mar. 3, 1971, 46-11412; Mar. 3, 1971, 46-11413; Mar. 3, 1971, 46-11414; Mar. 3, 1971, 46-11415; Mar. 3, 1971, 46-11416; Mar. 3, 1971, 46-11417

Int. Cl. H04b *1/32*

U.S. Cl. 325—334 **20 Claims**



1. For a receiver receiving channels, said receiver including a tuner, a channel selection device comprising

a. a main local oscillator in said tuner, said main local oscillator capable of having the oscillation frequency thereof swept in response to a control signal,

b. an auxiliary local oscillator capable of having the oscillation frequency thereof swept in response to a further control signal,

c. switching means connected to said main and auxiliary local oscillators for alternately providing said control signals to said main and auxiliary local oscillators, for alternately maintaining constant the frequency of the main local oscillator when the auxiliary local oscillator is sweeping and for maintaining constant the frequency of the auxiliary local oscillator when the main local oscillator is sweeping,

d. frequency detection means connected to said main and auxiliary oscillators for detecting the frequency at which said oscillators are oscillating,

e. means for manually selecting a desired channel

f. means connected to said frequency detection means for producing a detection signal in response to a correspondence between the oscillation frequency of the main local oscillator and the frequency of said desired channel, and

g. means for de-energizing said switching means in response to said detection signal and for maintaining said local oscillator oscillating at said frequency, whereby the channel selection device is automatically set to the frequency corresponding to the manually selected channel.

3,893,033

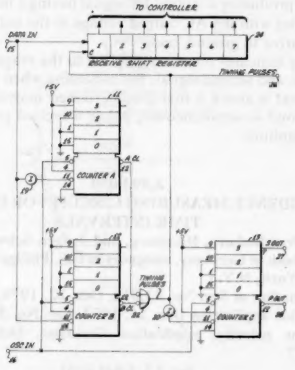
APPARATUS FOR PRODUCING TIMING SIGNALS THAT ARE SYNCHRONIZED WITH ASYNCHRONOUS DATA SIGNALS

DeVer C. Finch, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed May 2, 1974, Ser. No. 466,115

Int. Cl.[2] H03K *1/17, 5/13*

U.S. Cl. 328—63 **3 Claims**



1. Apparatus for producing timing signals that are synchronized with asynchronous data signals, for use with a source of data and a source of oscillator signals, said apparatus comprising:

first and second up/down counters each having first and second input leads and an output lead, said first input lead of said first counter being connected to said source of data, said source of oscillator signals being connected to said second input leads of said first and said second counters;

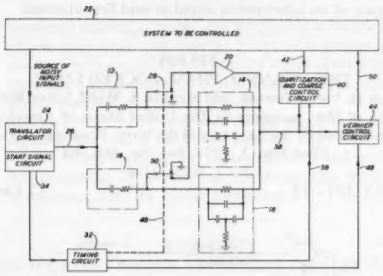
an inverter, said inverter being connected between said source of data and said first input lead of said second counter;

a logic gate having first and second input leads and an output lead, said first input lead of said gate being connected to said output lead of said first counter, said sec-

ond input lead of said gate being connected to said output lead of said second counter; and

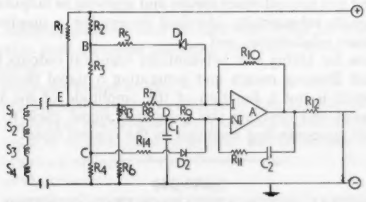
a shift register having first and second input leads and a plurality of output leads, said first input lead of said register being connected to said source of data, said second input lead of said register being connected to said output lead of said gate.

3,893,034
SMOOTHING CIRCUITS
Charles C. Willhite, Convent Station, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 4, 1958, Ser. No. 771,923
Int. Cl. H03k *17/02*
U.S. Cl. 328—71 **5 Claims**



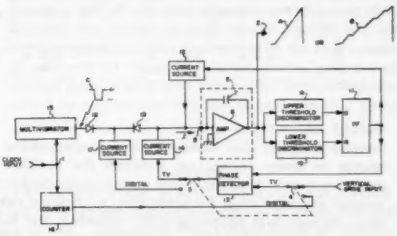
5. In a control system, a direct current amplifier circuit, alternative long and short time constant smoothing circuits to be selectively employed with said amplifier circuit, each of said smoothing circuits including input and feedback portions, means for initially selecting said short time constant smoothing circuit, circuitry for precharging both portions of said long time constant smoothing circuit and for grounding the midpoint of said long time constant circuit during the selection of said short time constant circuit, and means for thereafter switching over to said long time constant smoothing circuit.

3,893,035
AMPLIFICATION CIRCUIT
Kenneth Henry Higgens, Sutton Coldfield, England, assignor to Dunlop Limited, London, England
Filed Oct. 26, 1973, Ser. No. 409,931
Claims priority, application United Kingdom, Nov. 4, 1972, 50915/72; May 19, 1973, 23980/73
Int. Cl. H03k *5/20, 5/18*
U.S. Cl. 328—146 **4 Claims**



1. Apparatus for detecting pulse signals from pulse generating means, comprising: differential amplifying circuit means for generating an output signal having one of two possible voltage levels depending upon the voltage difference of input signals applied to said amplifying means, said amplifying means having first and second input terminals coupled to each other through a voltage dividing circuit to create a constant potential difference between said input terminals; and a filter circuit coupled to one of said input terminals to substantially inhibit pulse signals from being applied to said one input terminal; said amplifying means output signal changing its voltage level when a pulse signal appears at the other of said input terminals, the negative peak of said pulse signal exceeding the constant potential difference between said first and second input terminals.

3,893,036
PRECISION FUNCTION GENERATOR
James Louis Cavoretto; Alfred Alden Allworth, and Carlo Infante, all of Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Filed July 27, 1973, Ser. No. 383,413
Int. Cl. H03k *4/10*
U.S. Cl. 328—185 **5 Claims**



1. A precision function generator for generating linear or linear stepped ramp waveform signals in response to selected input synchronizing signals, comprising:

signal input receiving means for receiving the synchronizing signals;

integrator means having an output whose slope is proportional to an input current applied thereto;

digital control means responsive to said output for providing a digital control signal, and

current source means including phase detector means responsive to said digital control signal and said selectable signal for providing a phase error signal, a plurality of selectively adjusted current means whose outputs are adjustable in response to said phase error signal to provide said input current, means for selecting said selectively adjustable current means, and gate means responsive to a switching pulse for selecting said selectively adjustable current means, said current source means responsive to said digital control signal and the synchronizing signals for providing said input current.

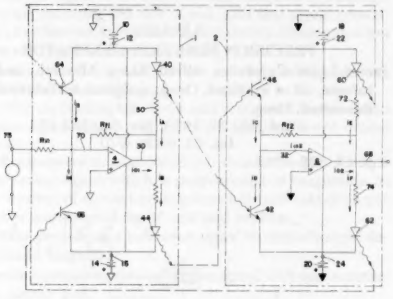
3,893,037
ISOLATING LINEAR AMPLIFIER
William L. Herbert, 1405 Inglis Ave., Columbus, Ohio 43212
Filed Sept. 9, 1973, Ser. No. 377,708
Int. Cl.[2] **H03F** *17/00*
U.S. Cl. 330—59 **11 Claims**

1. A multistage isolating amplifier including an improved circuit for applying a signal from the output of a first amplifier stage to the input of a second amplifier stage with electrical isolation between said amplifier stages, wherein the improvement comprises:

a. at least two electrically isolated power supplies, a different supply connected to said first amplifier stage and said second amplifier stage respectively, each supply having a common terminal connected to a common terminal of its respective amplifier stage and having a positive terminal and a negative terminal; and

b. a signal applying means for applying a signal from the output of said first amplifier stage to the input of said

second amplifier stage, said signal applying means comprising a pair of optical couplers having their photoemissive elements in series connection between the positive and negative supply terminals of the power supply connected to said first amplifier stage for permitting a quiescent current flow through said photoemissive elements and having the output of said first amplifier stage connected intermediate said photoemissive elements, said optical couplers also having their photoresponsive elements in series connection between the positive and negative terminals of the power supply connected to said second amplifier stage for permitting a quiescent current flow through said photoresponsive elements and having the input of said second amplifier stage connected intermediate said photoresponsive elements.



3,893,038
AUTOMATIC GAIN CONTROL CIRCUIT

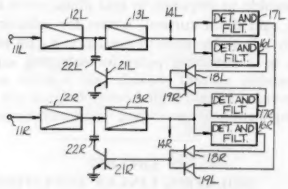
Katsuyoshi Omata, Tokyo, and Nobuaki Sato, Kanagawa-ken, both of Japan, assignors to Sony Corporation, Shinagawa-ku, Japan

Filed Aug. 26, 1974, Ser. No. 500,256

Claims priority, application Japan, Aug. 27, 1973, 48-100433

Int. Cl. H03g *3/30;* **H03f** *3/68*

U.S. Cl. 330—124 R **10 Claims**



1. An automatic gain control circuit for a multi-channel amplifying system, said gain control circuit comprising:

A. first and second gain control means connected to first and second ones of said channels, respectively;

B. first control signal means connected to said first channel to be energized by an information signal therein to generate a first control signal and connected to said first gain control means to form a first control circuit comprising a first time constant circuit having a first time constant value to control the gain of said information signal in said first channel;

C. second control means connected to said first channel to be energized by an information signal therein and connected to said second gain control means to form a second control circuit comprising a second time constant circuit having a different time constant value than said first time constant circuit to control the gain of an information signal in said second channel;

D. third control means connected to said second channel to generate a third control signal in response to an information signal in said second channel, said third control means being connected to said second gain control means to form a third gain control circuit comprising a third time constant circuit having a different time constant value than said second time constant circuit to control the gain of said information signal in said second channel; and

E. fourth control means connected to said second channel to be energized by an information signal in said second channel and connected to said first gain control means to form a fourth gain control circuit comprising a fourth time constant circuit having a different time constant value than said third time constant circuit to control the gain of an information signal in said first channel.

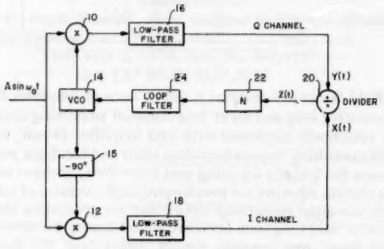
3,893,039
TWO-CHANNEL PHASE-LOCKED LOOP

Joseph H. Yang, Towson, and Stephen S. Wolff, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1974, Ser. No. 466,364

Int. Cl. H03b *3/04*

U.S. Cl. 331—12 **7 Claims**



7. A phase-lock loop comprising:

first mixer means;

second mixer means;

input means for applying an input signal to said first and said second mixer means;

voltage-controlled oscillator means applying its output signal directly to said first mixer means to be mixed with the input signal and also applying its output signal phase-shifted by 90° to said second mixer to be mixed with the input signal;

means for filtering the quadrature-related outputs from said first and second mixer means and applying as outputs two signals substantially identical except for a quadrature phase relationship; and

means for taking said substantially identical outputs from said filtering means and generating a signal therefrom which is not a function of the amplitude of the input signal and applying this generated signal back to said voltage-controlled oscillator as the control signal.

3,893,040
DIGITAL AUTOMATIC FREQUENCY CONTROL SYSTEM

Maurice C. Harp, Belmont, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 27, 1974, Ser. No. 455,109

Int. Cl.[2] H03B *3/04*

U.S. Cl. 331—14 **6 Claims**

1. An automatic frequency control system wherein the frequency of an oscillator is periodically determined during

intervals of time precisely controlled to derive indications of the frequency thereof for controlling said frequency, said system comprising:

a frequency controllable oscillator;

timing means producing timing signals defining a precise predetermined interval of time;

a binary counting means, responsive to the oscillator output signal and to the timing means for counting the number of cycles in the oscillator output signal during each predetermined interval of time, and producing a binary signal of one state when said number of cycles is greater than a predetermined number and a binary signal of the opposite state when said number of cycles is less than the predetermined number;

a first means for converting said binary signal to an analog signal at the end of each time interval; and

a second means coupling the analog signal to said oscillator for increasing or decreasing the frequency thereof in accordance with the binary indication.

3,893,041

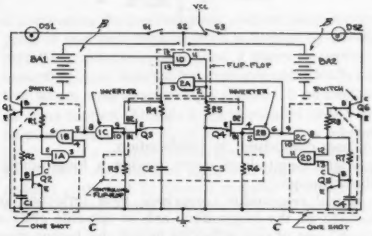
OSCILLATING POWER SWITCHING CIRCUIT FOR ALTERNATELY ENERGIZING TWO LIGHTS

Charles C. Foster, 6531 Riverton Ave., North Hollywood, Calif. 91606, and Leonard W. Hughes, 6566 Tyrone Ave., Van Nuys, Calif. 91401

Continuation of Ser. No. 151,385, June 9, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 393,990

Int. Cl. H03k *3/26*

U.S. Cl. 331—45 **8 Claims**



1. Interdependent power circuits with a pair of alternately operable load elements requiring electrical power for their operation;

a grounded power source,

a flip-flop circuit means comprising first and second interconnected NAND gates and each with a first interlocking input, a second controlling input and an output, the first interlocking input of each being connected to the output of the other,

a pair of switching circuit means and each comprising a unijunction transistor with its emitter connected into a time determination resistorcapacitor network, each of said networks being connected to the output of a corresponding one of said flip-flop NAND gates respectively, a pair of inverters and each comprised of a NAND gate with an input and an output, and with the input connected to a base of a corresponding one of said unijunction transistors,

a pair of alternately operable pulse generating one-shot circuits and each comprised of a "set" and a "reset" NAND gate, a "reset" transistor and a timing resistor-capacitor network, the "set" NAND gate having first and second inputs and an output with the first input connected to both the output of a corresponding one of said inverter NAND gates and to the second controlling input of the other of said flip-flop NAND gates, the "reset" NAND gate having first and second inputs and an output with the first input connected to the output of the set NAND gate and to the timing resistor-capacitor network and with the output connected to the second input of the set NAND gate, the reset transistor with its emitter connected to ground and with its collector connected to the second input of the reset NAND gate and with its base connected into the "timing" resistor-capacitor network, a pair of power switching transistors and each with its emitter connected to ground, with its base connected to the output of a corresponding one of said set NAND gates, and with its collector connected through a corresponding one of said load elements to the power source, whereby the interdependent power circuits are alternately triggered at rates determined by the time constants of said pair of switching circuit means, and power is applied through each load element for time periods determined by a corresponding one of said one-shot circuits.

3,893,042

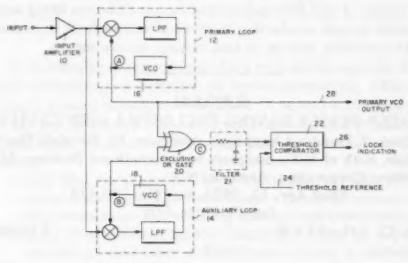
LOCK INDICATOR FOR PHASE-LOCKED LOOPS

Edward C. Whitman, Laurel, and George B. Blake, Greenbelt, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 12, 1973, Ser. No. 423,967

Int. Cl.[2] H03F *3/26*

U.S. Cl. 331—55 **4 Claims**



1. A phase-lock indication circuit for indicating a locked condition in a phase-locked loop in response to an incoming periodic signal comprising:

a first phase-locked loop having a VCO center frequency;

an auxiliary phase-locked loop having a VCO frequency slightly different from the center frequency of said first phase-locked loop, wherein the capture range of said auxiliary loop overlaps that of said first loop;

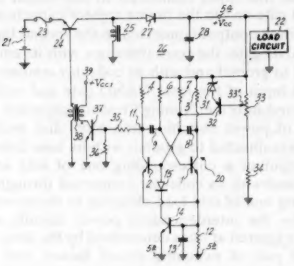
means for applying said incoming signal to said first phase-locked loop and to said auxiliary phase-locked loop; and

means for comparing the outputs of said first phase-locked VCO and said auxiliary phase-locked VCO for indicating that said first loop and said auxiliary loop are driven in synchronism by said incoming signals.

3,893,043
ASTABLE MULTIVIBRATOR CIRCUIT

Toshimi Fukuoka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1974, Ser. No. 459,262
Claims priority, application Japan, Apr. 13, 1973, 48-44473
Int. Cl. H03k *3/282*
U.S. Cl. 331—113 R **8 Claims**

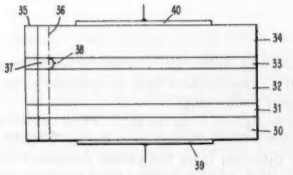


1. An astable multivibrator circuit comprising first and second circuit elements each having conductive and non-conductive states, voltage source means, means connecting said first and second circuit elements with each other and with said voltage source means for normally causing said first and second circuit elements to alternatively and reciprocally assume said conductive states thereof, signal output means connected with at least one of said first and second circuit elements for providing an output signal in dependence on said conductive and non-conductive states of said circuit elements, current detecting means connected with said first and second circuit elements for detecting a total current flowing through the latter when in said conductive state, and means for causing one of said first and second circuit elements to assume said non-conductive state when said total current detected by said current detecting means exceeds a predetermined value either by reason of said first and second circuit elements being accidentally in said conductive state simultaneously or by reason of an excessive voltage at said voltage source means.

3,893,044
LASER DEVICE HAVING ENCLOSED LASER CAVITY

William P. Dumke, Chappaqua, and Jerry M. Woodall, Hartsdale, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,575
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 H **2 Claims**

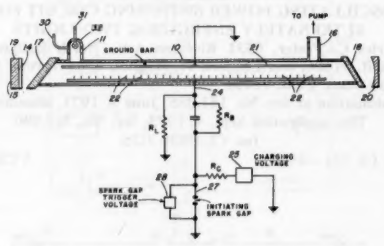


1. A semiconductor laser comprising:
a substrate of P type conductivity gallium arsenide,
a first layer of P type conductivity gallium aluminum arsenide disposed on said substrate,
a second layer of N type conductivity gallium aluminum arsenide disposed on said first layer,
a third layer of N type conductivity gallium arsenide disposed on said second layer forming with said second layer a NN heterojunction,
a fourth layer of N type conductivity gallium aluminum arsenide disposed on said third layer forming with said third layer a NN heterojunction,
a regrown region of P type conductivity gallium aluminum arsenide intersecting a portion of said substrate and each of said layers forming with said third layer a PP heterojunction,
a diffusion front emanating from said regrown region forming within a portion of said third layer a P type conductivity region said front forming with said third layer a PN homojunction.

3,893,045
PULSED CHEMICAL LASER

Thor V. Jacobson, 3049 Rue La Foret No. 10, and George H. Kimbell, 2650 Boul. Liegereis, both of Ste-Foy, Quebec, Canada

Filed Dec. 1, 1971, Ser. No. 203,734
Int. Cl.[2] H01S *3/22*
U.S. Cl. 331—94.5 G **2 Claims**

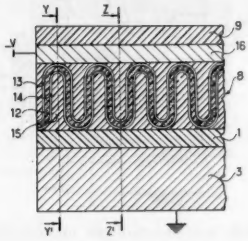


1. A laser comprising, in combination:
a gastight longitudinal cavity having a longitudinal axis therethrough;
an optical resonator comprising light reflecting means located on the longitudinal axis at opposite ends of the cavity, one of said reflecting means also having means to permit light to pass therethrough;
multiple transverse pin electrodes located within said cavity on transversely opposite sides of said longitudinal axis, said electrodes having terminals outside said cavity for connection to means for initiating an electrical discharge therebetween, the direction of discharge being transverse to the longitudinal axis and the discharge from all electrodes being simultaneous;
means providing a mixture of a hydrogen-rich gas and a fluorine-rich gas to said laser cavity, said gases being of a type which chemically react with each other, when exposed to an electrical discharge, to produce a hydrogenfluorine gas compound having hydrogen fluoride molecules which are in an excited state, so that spontaneous lasing action occurs; and
means for exhausting the reaction products of said chemical reaction from said cavity,
said gaseous mixture comprising 6.4 to 9.5 parts of SF_6, 1 part of C_3H_8, and 0 to 160 parts of He.

3,893,046
PARALLEL PLATE TRANSMISSION LINE LASER EXCITATION SYSTEM

Bruno Godard, Gif-sur-Yvette; Bernard Lacour, Villebon-sur-Yvette, and Maurice Michon, Draveil, all of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed June 25, 1974, Ser. No. 482,914
Claims priority, application France, June 26, 1973, 73.23375; Sept. 21, 1973, 73.33973
Int. Cl. H01s *3/09, 3/22*
U.S. Cl. 331—94.5 G **14 Claims**



1. In a laser generator including: an active gaseous medium; an electric excitation line formed by an insulating plate inserted between a first metallic plate and a second metallic plate, one edge of each of the plates being in the shape of a parabola whose axis forms an angle α greater than zero with at least one slot formed in said first metallic plate and separating it into two distinct parts, the foci as well as the apices of said parabolas being respectively arranged on the same straight line perpendicular to the plane of the plates, said metallic plates being parallel to each other and connected to at least one voltage source; means for maintaining an active gaseous medium in said slot; and an excitation means for generating a current wave in said line and comprising discharger circuit means for producing a substantially point discharge between said metallic plates at the foci of the parabolas;

and comprising the improvement wherein at least one of the parts of said first metallic plate is formed by a horizontal metallic conductive plate, and a sheet consisting of an insulating layer inserted between two electrically conductive layers, said sheet being folded back on itself so that its cross-section through a plane parallel to the slot and perpendicular to the plane of the plates has substantially the form of a continuous series of U's having upper and lower ends and vertical legs, said upper ends being in contact with said horizontal metallic conductive plate, said lower ends being in contact with said insulating plate.

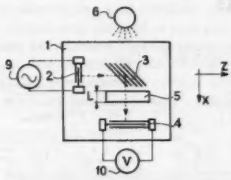
3,893,047
ACOUSTIC SURFACE WAVE TRANSMISSION SYSTEM

Claude Lardat, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 4, 1974, Ser. No. 448,083
Claims priority, application France, Mar. 9, 1973, 73.08560
Int. Cl. H03h *9/26, 9/30, 9/32*
U.S. Cl. 333—30 R **11 Claims**

1. Acoustic surface wave transmission device using means cooperating in a combination comprising:

a piezoelectric substrate having on one face transducers between which the acoustic surface waves propagate; at least one transmitting electro-acoustic transducer connected to an electric signal source and producing the transmitted acoustic waves; at least one acousto-electric transducer receiving the waves and outputting to a load; at least one reflective grating constituted by a series of discontinuities parallel to one another at an inclination to wave propagation direction redirecting the transmitted wave; characterised in that the device also comprises at least one thin photoconductive layer (5) disposed on the substrate (1) between the grating (3) and the receiving transducer (4), a light source (6) to cause illumination of said layer so as to make use of the zero-electric-field

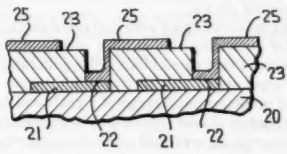


acousto-electric effect arising from interaction between the layer when illuminated and the acoustic surface wave, and means to allow said zero effect to take place only at given regions of said substrate between said grating and said receiving transducer.

3,893,048
MATCHED MIC DELAY LINE TRANSDUCER USING A SERIES ARRAY

Stuart I. Lieberman, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 8, 1974, Ser. No. 486,296
Int. Cl. H03h *9/26, 9/30, 9/32*
U.S. Cl. 333—30 R **9 Claims**



1. A transducer arrangement for a bulk mode acoustic delay line comprising a plurality of series connected, adjacent, closely spaced transducers disposed on an end surface of said delay line, each two adjacent transducers of said plurality of transducers comprising first and second transducers each having,

a thin film metal ground layer electrode, the end of said electrode of said first transducer extending beyond said first transducer and abutting said second transducer,

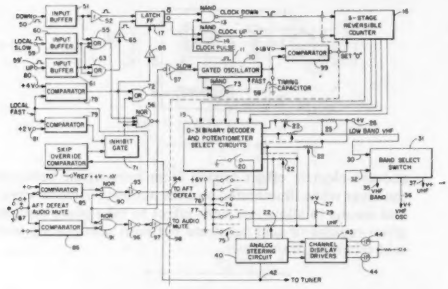
a layer of electromechanical transducer material disposed on said ground layer electrode and having a transducer material top surface and at least a side surface at right angles thereto and covering all but a specified exposed end portion of the transducer ground layer electrode, said end of said first transducer ground layer electrode being the end of said specified end portion of said first transducer ground layer electrode,

and a thin film metal top layer electrode disposed on said top surface of said transducer material layer and overlying part of said ground layer electrode, the top layer electrode of said second transducer extending beyond said ground layer electrode of said second transducer and into overlying contact with the specified exposed end portion of the ground layer electrode of said first transducer to connect said first and second transducers in series, said top layer electrode of said second transducer being bent at right angles down a said side surface of transducer material and then at right angles again into said overlying contact.

3,893,049
ELECTRONIC TUNING SYSTEM FOR TELEVISION RECEIVERS

Derek Bray, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 25, 1974, Ser. No. 454,429
Int. Cl. H03j 1/22; H03h 5/12
U.S. Cl. 334—15 **11 Claims**



1. An electronic tuner control system including in combination:

a gated clock pulse generator for producing clock pulses at first and second frequencies on an output thereof, said second frequency being higher than said first frequency; control means energizable for initiating and maintaining operation of said gated clock pulse generator to cause said clock pulse generator to produce said clock pulses in response thereto at said first frequency and to terminate production of said clock pulses upon deenergization of said control means;

overriding means coupled with said gated clock pulse generator for overriding said control means and maintaining operation of said gated clock pulse generator for so long as an input signal to said overriding means is within a second predetermined range of signals and for terminating operation of said gated clock pulse generator following deenergization of said control means when the input signal to said overriding means is in a first predetermined range of signals; and

direct select switch means coupled with said gated clock pulse generator for causing operation thereof at said second frequency.

3,893,050
SOLENOID ACTUATED CIRCUIT BREAKER OPERATOR

John G. Salvati, and Louis N. Ricci, both of Beaver Falls, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 15, 1974, Ser. No. 470,104
Int. Cl. H01h 3/02
U.S. Cl. 335—1 **8 Claims**

1. An operating mechanism for remotely controlling a circuit breaker, said operating mechanism comprising:

a. a frame mountable in association with a circuit breaker, said circuit breaker having an operating handle,

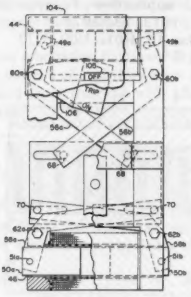
b. a saddle assembly adapted to engage the operating handle of the associated circuit breaker, said saddle assembly activating the operating handle of the circuit breaker upon movement of said saddle assembly,

c. means attached to said frame for supporting said saddle assembly, said saddle assembly supporting means permitting linear longitudinal movement of said saddle assembly with respect to said frame through sufficient distance to actuate the associated circuit breaker operating handle from one operating position to another operating position,

d. solenoid means, said solenoid means comprising movable core means,

e. means for energizing said solenoid means to cause said core means to move from one operating position to another operating position; and,

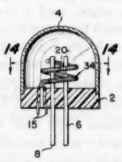
f. linkage means connecting said saddle assembly and said core means, said linkage means transmitting force from said core means to said saddle assembly through lost motion connections at a plurality of points spaced away from the centerline of said saddle assembly, said saddle assembly moving said breaker handle from one operating position to another operating position in response to movement of said core means.



3,893,051
ELECTROMAGNETIC REED SWITCH

Bernard Edward Shlesinger, Jr., 9411 Macklin Ct., Alexandria, Va. 22309, and Charlie D. Mariner, 2846 Greenway Blvd., Falls Church, Va. 22042

Filed Mar. 19, 1974, Ser. No. 452,505
Int. Cl. H01h 1/66
U.S. Cl. 335—151 **59 Claims**



1. A reed switch comprising:

a. a support,

b. an electromagnet and a magnetic reed having portions supported by said support and in close proximity to each other,

c. said electromagnet including a core and a coil,

d. conductor means supported by said support,

e. said conductor means including a contact portion,

f. said magnetic reed including a free end having a thin hinge facing said core,

g. said magnetic reed including a contact portion,

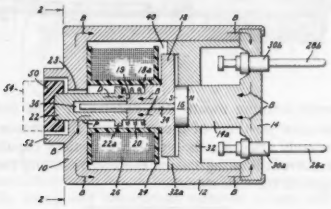
h. said conductor means contact portion and said magnetic reed contact portion being positioned for contact engagement and disengagement with each other,

i. whereby upon activation of said electromagnet said magnetic reed contact portion will be drawn to or away from said conductor means contact portion by virture of said hinge to open or close a circuit.

3,893,052
SHOCK-RESISTANT INDICATING DEVICE

Peter Kotos, Havertown, Pa., and Harry G. Kokolis, Cherry Hill, N.J., assignors to General Electric Company, New York, N.Y.

Filed Sept. 26, 1974, Ser. No. 509,505
Int. Cl. H01f *7/08*
U.S. Cl. 335—229 **8 Claims**



1. A shock-resistant electromechanical indicating device comprising:

a. spaced-apart first and second walls and a frame connecting said walls, said walls and said frame being made of a highly magnetically permeable material, and said first wall containing an aperture;

b. a reciprocally-movable, generally-cylindrical plunger also made of highly magnetically permeable material extending into said aperture with a loose fit, said plunger having a normal retracted position and an extended indicating position;

c. spring means normally producing a force urging said plunger toward said extended position;

d. guide means for guiding said plunger for a movement in a direction substantially parallel to the longitudinal axis of said plunger but allowing the outer periphery of said plunger when the plunger is in its retracted position to contact the internal wall of said aperture along a restricted portion of said internal wall;

e. a permanent magnet member fixed relative to said second wall producing a first magnetomotive force which is in opposition to and of a magnitude greater than said spring force and a second magnetomotive force applied in a radial direction to said plunger at said aperture;

f. said second magnetomotive force normally holding the outer periphery of said plunger in contact with said restricted portion of the internal wall of said aperture when the plunger is in said retracted position; and

g. a normally-deenergized coil surrounding but spaced from said plunger energizable to produce flux in opposition to that from said permanent magnet, thus reducing said first magnetomotive force sufficiently to allow said spring to drive said plunger to its extended position.

3,893,053
ELECTROMAGNET LATCHING MEANS FOR PLUNGER

Mikhail Alexandrovich Onatsevich, ulitsa 6, Minusinskaya, kv. 67, Moscow, U.S.S.R.

Filed Apr. 25, 1974, Ser. No. 464,209
Int. Cl. H01f *7/08*
U.S. Cl. 335—254 **2 Claims**

1. A plunger electromagnet comprising:

a housing;

a working armature disposed in said housing for axial displacement in said housing

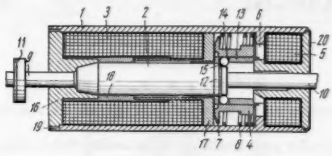
a winding enveloping said working armature;

an auxiliary armature disposed in said housing and comprisisng arranged coaxially with said working armature;

a spring circumposed about said auxiliary armature in engagement between said flange and housing and spring-loading the auxiliary armature toward said working armature;

a second winding having an axial air gap between said second winding and said auxiliary armature so that the magnetic field of said second winding causes axial movement of said auxiliary armature into said air gap in opposition to said spring loading; said working armature having an end face portion facing said auxiliary armature;

a truncated-conical stop secured at said end face portion of said working armature; a locking means in said housing comprising a hollow cylinder and fixedly interposed between the path of movement of said working armature and said auxiliary armature; said cylinder including at

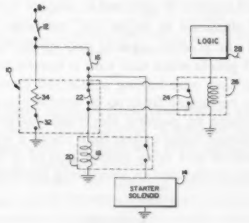


least one hole opening radially through said cylinder for communicating with the respective path of travel of the respective armatures, a ball trapped in said hole for movement therein radially between said paths of travel, said ball being engagable with said truncated conical stop of said working armature with the inner surface of the auxiliary armature overlying the same when the working armature is energized during one attitude of operation of the plunger electromagnet, and being positionable in abutting relation with said auxiliary armature and being retained there by the outer surface of the working armature when the auxiliary armature is energized during another attitude of operation.

3,893,054
MANUALLY SET SWITCHING DEVICE

Leo Marcoux, Rehoboth; Charles D. Flanagan, Attleboro, and Thomas E. Evans, Rehoboth, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 5, 1973, Ser. No. 421,889
Int. Cl. H01h *39/00*
U.S. Cl. 337—37 **23 Claims**



1. A manually set switching device comprising:

first switch means having an enabling switch condition and an overriding switch condition and operatively connectible to a load circuit;

electrically energized force generating means operatively connected to the first switch means for moving the first switching means between the two switch conditions;

second switch means having enabling and disabling switch conditions and coupled with the electrically operated force generating means to control the energization and deenergization of the force generating means;

latch means operatively engagable with the second switch means for holding the second switch means in the disabling switch condition upon deenergization of the force generating means; and

manually operable actuator means for disengaging the second switch means from the latch means.

3,893,055

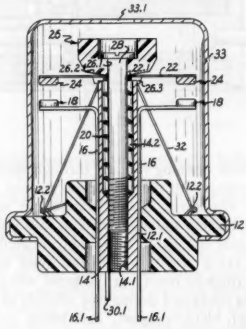
HIGH GAIN RELAYS AND SYSTEMS

Ernest M. Jost, Plainville; Lyle E. McBride, Jr., Norton, and Teuvo J. Santala, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 16, 1973, Ser. No. 351,683

Int. Cl. H01h *61/06*

U.S. Cl. 337—140 **15 Claims**



1. A relay comprising an electrically insulating base, stationary contact means mounted on said base, movable contact means mounted on said base for movement between a closed circuit position engaging said stationary contact means and an open circuit position spaced from said stationary contact means, spring means mounted on said base biasing said movable contact means from one of said positions to the other of said positions, and a metal wire secured between said movable contact means and said base, said wire being of a selected metal alloy to be deformed from an original length to a second length by said spring bias as said movable contact means is moved from said one position to said other position by said spring bias while said alloy displays a relatively low modulus of elasticity below a transition temperature and to abruptly return to said original length and to display a relatively higher modulus of elasticity to move said movable contact means back to said one position against said spring bias with a force of at least 15 grams when said wire is heated to said transition temperature, said wire having a selected cross-sectional size and length to be heated from room temperature to said transition temperature by passing electrical current through said wire with a power input of less than about 2 watts for permitting operation of said relay with a gain of at least about 500 to 1 at power levels used in energizing integrated circuits.

3,893,056

FUSE DEVICE

Robert H. Harner, Park Ridge, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Apr. 1, 1974, Ser. No. 456,866

Int. Cl. H01h *85/02*

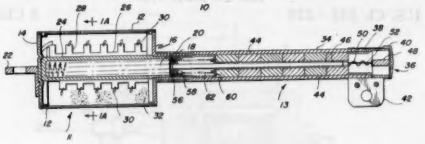
U.S. Cl. 337—283 **19 Claims**

1. A current-limiting fuse device for interrupting current flow comprising:

an expulsion fuse means comprising at least one fusible element for optimumly interrupting current flow in a first current range, said expulsion fuse means having operative portions; and

a current-limiting means for optimumly interrupting current flow in a second current range, said current-limiting portion having a hollow interior portion;

said expulsion fuse means and said current-limiting means being joined together so that the internal portion of the



current-limiting means can receive at least one of the operative portions of the expulsion fuse means without adversely affecting the voltage withstand capabilities of the current-limiting means thereby reducing the overall length of the fuse device.

3,893,057

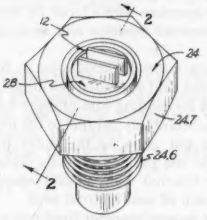
SEALED THERMOSTATIC SWITCH

Gerrit J. Beunk, Almelo, and Arie van der Ploeg, Wierden, both of Netherlands, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 3, 1974, Ser. No. 485,402

Int. Cl. H01h *37/52*

U.S. Cl. 337—380 **3 Claims**



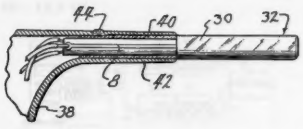
1. A sealed electrical switch comprising a seal body having a well therein which is open at one end, having a shoulder extending completely around said open well end, and having a wall upstanding from said shoulder; a switch means having a frame, operative switching components mounted on said frame for performing an electrical switching function, and terminal means extending in a selected direction from said frame for electrically connecting said switch means in an electrical circuit, said switch means being disposed in said well of said seal body with said terminal means extending out of said open well end; a compressible sealing member of electrically insulating material having a portion resting on said shoulder completely around said open well end and having an aperture fitted around each terminal means of said switch means extending out of said well, said compressible member having an upstanding portion with cam surfaces thereon surrounding a portion of each aperture in said compressible member and inclined toward an end of said aperture; and a spreader member of a relatively more rigid electrically insulating material having an aperture fitted around each terminal means of said switch means, said spreader member having a recessed portion around each aperture therein interfitted with an upstanding portion of said compressible member, said seal body having said wall engaging said spreader member pressing said compressible member against said shoulder and camming said upstanding portion of said compressible member around said terminal means of said switch means for sealing said switch means within said body to form said sealed electrical switch.

3,893,058

ELECTRONIC THERMOMETER PROBE

Arlie L. Keith, Orlando, Fla., assignor to J & J Manufacturing Corporation, West Palm Beach, Fla.

Filed Mar. 6, 1973, Ser. No. 338,501
Int. Cl. G01k 7/22
U.S. Cl. 338—28 5 Claims



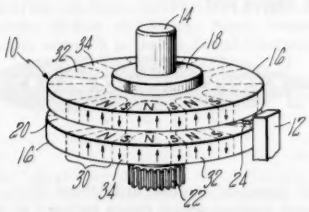
1. A probe for an electronic thermometer having an elongated foundation member, a long conductor member extending axially along said foundation member to one end, a first shorter conductor member extending axially to a first location spaced from the end, a second shorter conductor member extending axially to a second location spaced from the end, a resistor material connecting said first shorter conductor at said first location to said long conductor at the end of said foundation member, a first insulating material insulating said resistor material from said long conductor except at the end where they are connected, a thermistor material connecting said second shorter conductor at said second location to said long conductor at the end of said foundation member, a second insulating material insulating said thermistor material from said resistor material and said long conductor except at the end where they are connected, said resistor material and said thermistor material being positioned relative to each other so that heat from said resistor material will heat said thermistor material, a protective covering being located over and fixed to the end of said foundation member containing the resistor material and thermistor material.

3,893,059

PULSE GENERATOR WITH ASYMMETRICAL MULTI-POLE MAGNET

Walter J. Nowak, Vernon, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Mar. 13, 1974, Ser. No. 450,562
Int. Cl. H01c 7/16
U.S. Cl. 338—32 4 Claims



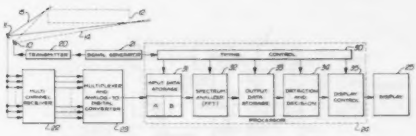
1. In a pulse generator comprising magnetic field means and a Hall sensor operative for generating an electrical signal upon the application of a magnetic field thereto, the Hall sensor and magnetic field means being mounted for relative movement for generating a train of electrical signals, the combination wherein the magnetic field means includes an asymmetrical multi-pole magnet having a plurality of symmetrically spaced pole pairs with each pole pair including a predominant magnetic pole of one polarity and a subservient magnetic pole of the opposite polarity.

3,893,060

AIRCRAFT VORTEX DETECTION SYSTEM

Martin Balser, Covina, Calif., assignor to Xonics, Inc., Van Nuys, Calif.

Filed Aug. 28, 1973, Ser. No. 392,254
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 14 Claims



1. In an aircraft vortex detection system, the combination of:

an acoustic echo system transmitter including a first acoustic transducer system for directing energy toward a zone in a generally fan shaped beam, and control means for energizing said transmitter beam in pulses;

an acoustic echo system receiver positioned adjacent said transmitter and including a second acoustic transducer system defining a plurality of generally side-by-side beams coincident with said transmitter beam for receiving acoustic energy of said transmitter backscattered by a vortex in a zone, and providing a receiver output for each receiver beam; and

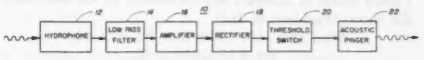
signal processor means having the receiver outputs as inputs for generating an output signal varying as a function of the backscatter echoes.

3,893,061

UNDERWATER ACOUSTIC DETECTION SYSTEM

Zaka I. Slawsky, Bethesda, and Wayne Dee Wilson, Silver Springs, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 13, 1970, Ser. No. 48,620
Int. Cl.[2] H04B 11/00
U.S. Cl. 340—3 E 4 Claims



1. An underwater acoustic detection system comprising:

hydrophone means for detecting an acoustic signal from an object in the water medium and converting said acoustic signal into an electrical signal;

low pass filter means for filtering said electrical output signal to provide a bandwidth limited electrical signal;

a full wave rectifier for providing a rectified electrical signal from said bandwidth limited electrical signal;

a threshold switch sensitive to the level of said rectified electrical signal that closes when the amplitude of said rectified electrical signal is above a certain threshold level;

an acoustic pinger for transmitting an acoustic detection signal through the water medium in response to the closing of said threshold switch, said acoustic detection signal having a frequency substantially higher than the cutoff frequency of said low pass filter; and

means remotely located from said hydrophone for receiving said transmitted signal.

3,893,062
TRANSMISSION SYSTEM

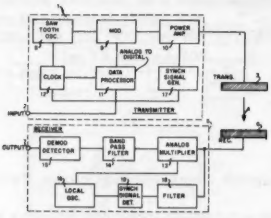
Alain Georges Segui, Rennes, France, assignor to Agence Nationale de Valorisation de la Recherche, France

Filed June 20, 1973, Ser. No. 371,599

Claims priority, application France, June 23, 1972, 72.22799

Int. Cl. H04b *11/00*

U.S. Cl. 340—5 R **6 Claims**



1. An ultrasonic underwater transmission system comprising a transmitter and at least one remote receiver, means in said transmitter for transmitting a carrier frequency modulated with an intelligence signal, means in said receiver for generating a first local receiver frequency, both said carrier frequency and said local frequency being subject to periodic variations according to a same predetermined variation law whereby said carrier and local frequencies naturally beat with each other as a function of said variations, means responsive to said beat frequency resulting from a beating of the received carrier frequency and the said first local frequency for filtering a band of signals having a center frequency selected according to the length of an underwater transmission path from said transmitter to said receiver and to the phase difference between said carrier frequency variation and the local frequency variation, and means for demodulation of said intelligence signal.

3,893,063
DETECTION STREAMER

Robert H. Park, Pluckemin, N.J.; Harold W. Klas, Washington, D.C., and Nelson N. Estes, Austin, Tex., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 15, 1944, Ser. No. 526,624

Int. Cl.[2] G01S *3/80*

U.S. Cl. 340—6 R **7 Claims**

1. A torpedo detecting device of the character disclosed comprising, in combination, a plurality of microphone units, means including orientation means for providing each of said units with a vertically arranged substantially dumbbell-shaped response pattern to a sound signal received thereby from a torpedo moving transversely with respect thereto, and coupling means for spacing said units with respect to each other in such a manner as to provide an overlapping of the response patterns of adjacent units and a substantially uniform longitudinal field of response to sound signals received from a torpedo passing any pair of adjacent microphone units at any point therebetween.

3,893,064
SIGNAL DISCRIMINATING DEVICE

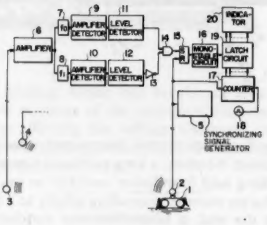
Motohisa Nishihara, and Yomei Kato, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 28, 1973, Ser. No. 345,489

Claims priority, application Japan, Mar. 29, 1972, 47-31494

Int. Cl. G01s *11/00*

U.S. Cl. 340—6 R **20 Claims**



1. A signal discriminating device which is employed with a system for measuring the time required until the reception of signals successively sent forth from a transmitter comprising a first selective amplifier means for selectively amplifying a first signal of a predetermined frequency, a second selective amplifier means for selectively amplifying a second signal of a frequency other than the predetermined frequency of said first signal, and a detecting means to detect the outputs of said first and second means, the output of said first means being identified as a desired signal when only said first means produces the output, and which further comprises a means through which only the signals arriving during predetermined periods before and after a predicted instant of arrival of a new signal corresponding to the time required until the reception of the preceding signal in the preceding measurement cycle are transmitted to said first and second means.

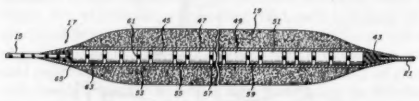
3,893,065
HYDROPHONE ARRAY

John D. Lea, Huntington, and George Rand, Franklin Square, both of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 5, 1973, Ser. No. 422,125

Int. Cl. G01v *1/38*; H04b *13/02*

U.S. Cl. 340—8 MM **8 Claims**



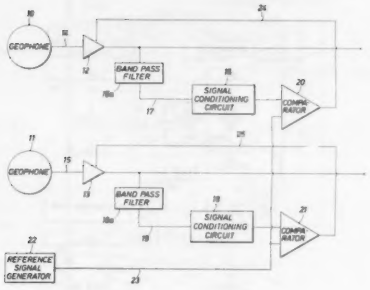
1. An improved towable hydrophone array of the type employing acoustic sensor means enclosed in an elongated tubular casing and adapted to respond to incident acoustic signals arriving from various directions with respect to the longitudinal axis of said casing, said improvement comprising sheath means positionable around the portion of the array containing said sensor means, said sheath means being fabricated from a highly compressible, reticulated material having open pores arranged to permit water to fill the voids therein during normal operation whereby the sheath means is rendered substantially acoustically transparent in the frequency range of interest, said sheath means having an outside diameter which is large with respect to the outside diameter of said tubular casing.

3,893,066

APPARATUS AND METHOD FOR ADJUSTING THE OUTPUT OF A PLURALITY OF GEOPHONES TO ELIMINATE THE EFFECT OF VARIATIONS IN THE NEAR SURFACE CHARACTER OF THE EARTH

Don A. Saunders, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed Feb. 25, 1974, Ser. No. 445,534
Int. Cl. G01v
U.S. Cl. 340—15.5 GC 7 Claims



1. A method of adjusting the amplitude of the output of each of a plurality of geophones for variations in the energy transmitting character of the earth layer near the surface below the geophones comprising obtaining a signal level from each geophone that is produced by ambient noise, comparing the signal level from each geophone with a reference signal level, and adjusting the output of each geophone in proportion to the ratio of the noise signal level for that geophone and the reference signal level so that the output signal level of each geophone resulting from seismic energy will be a substantially accurate indication of the seismic energy reaching the surface earth layer below the geophone.

3,893,067

TRAFFIC SIGNAL CONTROL SYSTEM

Hiroo Watanabe, Mukou, and Minoru Nagao, Nagaokakyo, both of Japan, assignors to Omron Tateisi Electronics Co., Japan

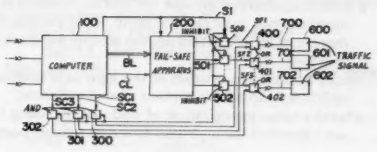
Filed Mar. 16, 1973, Ser. No. 341,848
Claims priority, application Japan, Mar. 16, 1972, 47-26848
Int. Cl. G08g 1/097
U.S. Cl. 340—46 9 Claims

1. A traffic signal control system for controlling traffic signals at a multiplicity of intersections, comprising,

a computer for counting first phase time of traffic signals and generating first signals for advancing phases of the traffic signals upon each countout of the first phase times, a fail-safe apparatus, in which second phase times of the traffic signals are set, and to which said first phase advance signals generated by said computer are supplied,

said fail-safe apparatus commencing the count of the second phase times in accordance with said first phase advance signals from said computer when said computer is normally operating, and for generating second signals for advancing the phases of said traffic signals upon attaining a count of said set second phase times, and

logic switch means for transmitting said first phase advance signals from said computer when said computer is normally operating, and for transmitting said second phase



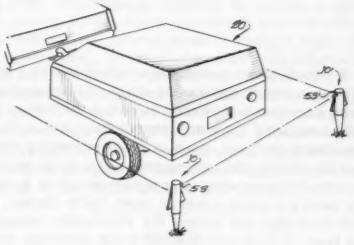
advance signals from said fail-safe apparatus when said computer fails.

3,893,068

TRAILER BACK-UP-RIGHT DEVICE

Raymond A. Tucker, Jr., 1048 Southwest 1 Ter., Pompano Beach, Fla. 33060

Filed Sept. 10, 1974, Ser. No. 504,693
Int. Cl.[2] G08G 1/14
U.S. Cl. 340—51 8 Claims



1. A trailer back-up-right guide device intended for use by a vehicle driver in the backing up of a towed trailer into a parking space without requiring the assistance or guidance of other individuals, the device comprising a pair of guide devices, each guide device comprising, in combination:

an elongated hollow tubular housing having a closed bottom end, an open top end, and cylindrical side wall surfaces; a compartment defined interiorly of the side walls with access thereto being through the open top end of the housing;

an inverted conically configured stake affixed at its base to the closed bottom end and projecting downwardly therefrom to its apex and adapted to be stabbed into the ground for supporting the housing at a position above the ground;

a reflector affixed to the front of the cylindrical sidewall surface along a tangential line of contact therewith projecting outwardly symetrically relative to the line of contact;

an electric lamp disposed inwardly of said compartment;

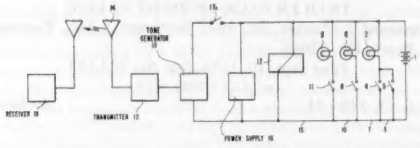
a plurality of electric dry cells disposed inwardly of said compartment;

an electrical switch mounted on said housing;
means connecting an electric lamp, said dry cell batteries, and said electrical switch in electrical series relationship such that the switch selectively controls the energization and de-energization of the electric lamp;
a cap closing the open top end of the housing compartment to retain the electric lamp and dry cells therein;
an aperture extending through the housing side walls in communication with the electric lamp for directing light rays therefrom in a direction forwardly of the housing normal to the plane of said reflector;
a second aperture in the side walls of the housing in communication with said electric lamp for directing light rays therefrom in a direction approximately 90° from said first aperture;
means deflecting a portion of the light rays from said front aperture onto a face surface of said reflector;
whereby upon energization of said electric lamp light rays are emmitted through said first and second ports.

3,893,069
VEHICLE ALARM SYSTEM

Robert L. Mason, Durham, N.C., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 28, 1974, Ser. No. 455,114
Int. Cl. B60r *25/10*
U.S. Cl. 340—63 **3 Claims**

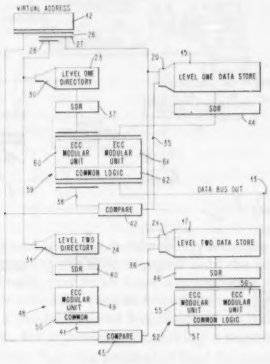


1. A vehicle alarm system for a vehicle having a battery, a passenger compartment having doors, a compartment lamp therein, a compartment circuit including the battery for electrically energizing the compartment lamp and a plurality of compartment switches, each at a corresponding one of the doors for closing the compartment circuit to energize the compartment lamp when a compartment door is opened, a trunk having a trunk cover, a trunk lamp therein, a trunk circuit including the battery for electrically energizing the trunk lamp, a trunk switch at the trunk cover for closing the trunk circuit to energize the trunk lamp when the trunk cover is opened, and an engine area for an engine, said engine area having an engine cover, an engine lamp therein, an engine circuit including the battery for electrically energizing the engine lamp and an engine switch at the engine cover for closing the engine circuit to energize the engine lamp when the engine cover is opened, said alarm system comprising
radio transmitting means for transmitting signals;
tone generating means connected to the transmitting means for producing signals and supplying the signals to the transmitting means for transmission; and
energizing means coupling the tone generating means to the compartment, trunk and engine circuits for energizing the tone generating means to produce signals when a circuit is closed, the energizing means comprising power supply means connected to the battery for producing a voltage for energizing the tone generating means, a relay switch connected between the power supply means and the tone generating means for controlling the energization of the tone generating means and a relay winding connected in parallel with the compartment, trunk and engine lamps for controlling the operation of the relay switch for closing the relay switch to connect the tone generating means to the power supply means when a lamp is energized.

3,893,070
ERROR CORRECTION AND DETECTION CIRCUIT WITH MODULAR CODING UNIT

Douglas C. Bossen, Wappingers Falls; Vincent A. Cordi, Vestal; Mu-Yue Hsiao, Poughkeepsie; Barry N. Shiffrin, Endicott, all of N.Y., and Ellis W. Glick, Deerfield, Ill., assignors to IBM Corporation, Armonk, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,530
Int. Cl. H04l *1/10*
U.S. Cl. 340—146.1 AL **7 Claims**



1. A modular odd weight encoder for data words that are multiples of a predetermined number of data bits, comprising, first means for encoding a first set of data bits having said predetermined number of data bits to form a minimum number of SEC DED bits according to an odd weight code,
second means for encoding a second set of data bits having said predetermined number of data bits to form a minimum number of SEC DED bits according to an even weight code and for forming a parity bit of all the data bits encoded in said even weight code, and
means combining in an Exclusive OR function each SEC DED bit of said first encoding means with a SEC DED bit of said second encoding means to form SEC DED bits in an odd weight code for all the data bits encoded by said first and second encoding means, said parity bit forming an additional SEC DED bit for said data bits encoded by said first and second encoding means.

3,893,071
MULTI LEVEL ERROR CORRECTION SYSTEM FOR HIGH DENSITY MEMORY

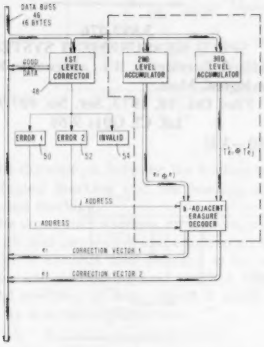
Douglas C. Bossen, Wappingers Falls; Mu-Yue Hsiao, Poughkeepsie, both of N.Y., and Arvin M. Patel, San Jose, Calif., assignors to IBM Corporation, Armonk, N.Y.

Filed Aug. 19, 1974, Ser. No. 498,510
Int. Cl. H04l *1/10*; **G11c** *29/00*
U.S. Cl. 340—146.1 AL **5 Claims**

1. In a random access memory system of the type that is functionally divided into units of storage each containing a plurality of data words with each word storing a number of bits of different arrays, an error correcting system comprising:
a first level error correction means including a SEC-MED code means adding a plurality of check bits to each data word in and out of storage to form a SEC-MED code word for correcting a single bit in error of each of the SEC-MED code words generated from the plurality of data words in the unit of storage on a word for word basis and providing a pointer for each SEC-MED code in the unit of storage containing more than one error;

second and third level error correction means adding additional code words to the units of storage for protecting said SEC-MED code words of the unit of storage on a cross word basis each byte of both additional code words being a check on one byte position in all of the words in the plurality of words, where each check byte of the first additional code word $B_{p,1} = A_{p,1}\ A_{p,2}\ A_{p,3}\ \ldots\ A_{p,M}$ and each check byte of the second additional code word $B_{p,2} = T\ A_{p,1}\ T^2\ A_{p,2}\ T^3\ A_{p,3}\ \ldots\ T^M\ A_{p,M}$;

second level accumulator level means for generating the syndrome $S_{p,1} = B_{p,2}\ T\ A_{p,1}\ T^2\ A_{p,2}\ \ldots\ T^M\ A_{p,M}$ for each data byte position in the SEC-MED code words of



the unit of storage while the first level error corrector is correcting single errors in the words;

third level accumulating means for generating the syndrome $S_{p,2} = B_{p,2}\ T\ A_{p,1}\ T^2\ A_{p,2}\ \ldots\ T^M\ A_{p,M}$ for each data byte position in the SEC-MED code words of the unit of storage while the first level corrector is correcting single errors in the syndrome, and,

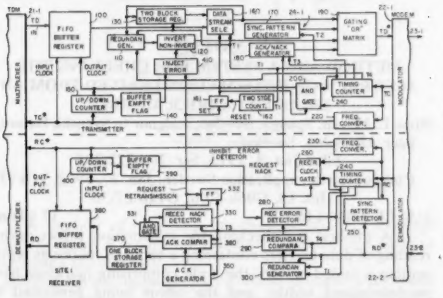
second and third level error correction means for correcting words containing multiple errors using the syndromes generated by the first and second level accumulator means and the pointers generated in the first level error correction means after the first level error correction means has corrected those words containing single errors.

3,893,072

ERROR CORRECTION SYSTEM

Renato A. D'Antonio, North Attleboro, Mass., and Alejandro B. Marton, Barrington, R.I., assignors to International Data Sciences, Inc., Providence, R.I.

Filed Aug. 3, 1973, Ser. No. 385,297
Int. Cl. H04l *1/16;* **G08c** *25/02*
U.S. Cl. 340—146.1 BA **13 Claims**



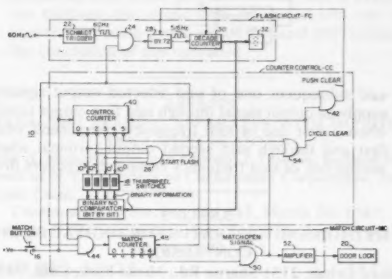
2. In an error correction subsystem, first means for generating redundancy signals based on blocks of data to be transmitted, second means for injecting an error into said redundancy signals, third means for recognizing a received request retransmission signal and controlling the injection of an error into said redundancy signals, means for transmitting blocks of data previously transmitted upon recognition of a received request retransmission signal, and first in first out storage means for storing blocks of data to be transmitted.

3,893,073

KEYLESS CONTROL MECHANISM

Paul S. Angello, Los Angeles, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1974, Ser. No. 440,202
Int. Cl. E05b *49/00;* **H04q** *3/02*
U.S. Cl. 340—147 MD **4 Claims**



1. Apparatus for generating a control signal in response to predetermined input signals, comprising, first means for sequentially displaying information for viewing by an observer, said first means including a display window having a critical viewing angle requiring the observer to assume a specific position relative to the display window in order to view the displayed information, second means including a single actuator means permitting an observer to selectively acknowledge displayed information and produce signals indicative of the acknowledged display information, and third means operatively connected to said second means and responding to said signals to determine if the acknowledged information corresponds to predetermined information, said third means producing a control signal if said acknowledged information corresponds to said predetermined information.

3,893,074

REMOTE CONTROL SYSTEM UTILIZING SIGNAL FREQUENCY SEQUENCE

Takao Mogi, Tokyo, and Hisao Okada, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 5, 1973, Ser. No. 404,374
Claims priority, application Japan, Oct. 12, 1972, 47-102096
Int. Cl. H04b *1/16;* **H04q** *9/12*
U.S. Cl. 340—171 PF **8 Claims**

1. A remote control system for remotely controlling an apparatus in response to a remote control signal having a plurality of different frequency components arranged in a predetermined selection of orders, said system comprising:

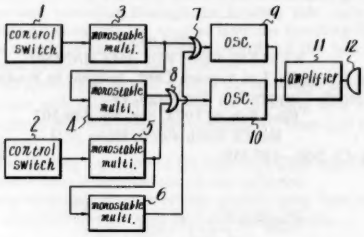
a. means for receiving the remote control signal transmitted thereto;

b. frequency selecting means for selecting the different frequency components of said received remote control signal with different frequencies and producing a plurality of selected output signals corresponding to said different frequency components, respectively;

c. means for memorizing one of said selected output signals;

d. first gating means for gating an output of said memorizing means in response to a subsequent one of said selected output signals; and

e. second gating means comprising first and second control signal output terminals and being connected to said first gating means to be enabled by the output of said first gating means during the occurrance of said subsequent one of said output signals and being gated in response to



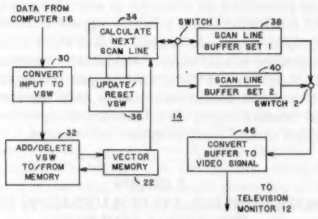
said subsequent one of said selected output signals to supply an output signal through said first output terminal when a first one of said frequency components occurs first and through said second output terminal when a second one of said frequency components occurs first.

3,893,075

METHOD AND APPARATUS FOR DIGITAL SCAN CONVERSION

Richard Orban, 2151 Sharon Rd., Menlo Park, Calif. 94025; Stephen C. Terry, 1801 9th Ave., San Francisco, Calif. 94122, and Horace J. Enea, 1240 Lisa Ln., Los Altos, Calif. 94022

Filed Dec. 29, 1972, Ser. No. 319,217
Int. Cl. G06f *3/14, 13/06*
U.S. Cl. 340—172.5 **49 Claims**



1. A digital scan conversion system for displaying on a raster scan output device an arbitrary graphical pattern, wherein said pattern comprises one or more vectors and wherein each vector is defined by graphical line data, comprising:

a. means for receiving digitally-coded graphical line information for each vector forming said arbitrary graphical pattern;

b. processing means responsive to said receiving means for determining at least graphical line boundary data for each vector and determining a vector storage word which uniquely defines each vector of said arbitrary graphical pattern, said processing means additionally including

c. means for storing said vector storage word for each vector;

d. means for accessing said vector storage words from said storing means so that the vector storage word for each vector is accessed at least once during each scan of said raster-scan output device;

e. first means responsive to said accessing means for determining for each vector forming the pattern, the intersection scan-line segments for each scan of said output device intersected by each of said vectors required to synthesize each vector of the pattern;

f. second means responsive to said vector storage words provided by said accessing means and to said intersection scan-line segments provided by said first means for determining for each scan of the raster scan output device the composite of all of the intersection scan-line segments which must be displayed during that scan and storing said composite; and

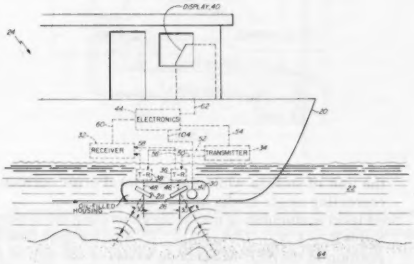
g. means responsive to said second determining means for activating and de-activating said raster-scan output device according to the stored composite of all of the intersection scan lines during each scan thereof.

3,893,076

SPEED MEASUREMENT SYSTEM

Peter J. Clifford, Barrington, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 18, 1973, Ser. No. 407,729
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 D **15 Claims**



1. A speed measurement system comprising:

a transducer system for coupling radiant energy into a medium into which a vehicle is moving;

means coupled to said transducer system for extracting data from a predetermined number of cycles of such part of said radiant energy as is reflected through said medium, said data extracting means comprising a plurality of intermediate storage means each of which stores data obtained respectively from successive ones of said cycles;

memory means coupled to said data extracting means for storing said data;

means coupled to said memory means for providing a periodic signal having said data; and

means coupled to said periodic signal providing means for counting cycles of said periodic signal to provide a measure of ships speed.

3,893,077

METHOD AND A SYSTEM FOR CHECKING THE ACCURACY OF INFORMATION DERIVED FROM AN ENCODED CARRIER MEMBER

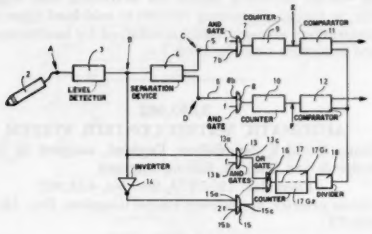
Rune L. Myren, Spanga, Sweden, assignor to Svenska Dataregister AB, Solna, Sweden

Filed Jan. 9, 1973, Ser. No. 322,225
Claims priority, application Sweden, Jan. 27, 1972, 918/72
Int. Cl. G06k *5/00;* **G11b** *27/36*
U.S. Cl. 340—146.1 R **17 Claims**

1. A method for checking for information errors during reading of data carriers containing a series of markings representing a coded record, the code comprising markings have predetermined widths, and the errors being generated by markings having an error-causing spot associated therewith comprising the steps of:

detecting the leading and trailing edge of each marking in a series of at least three markings and computing the width of each of said at least three markings;

computing the distance, *m*, between the trailing edge of the first detected marking and the leading edge of the second detected marking;



computing the distance, *o*, between the trailing edge of said second-detected marking and the leading edge of the third-detected marking;

comparing the computed width, *n*, of said second-detected marking with said distance *m* and emitting an error signal if said width *n* exceeds said distance *m* by a predetermined ratio; and comparing said width *n* with said distance *o* and emitting an error signal if width *n* exceeds distance *o* by a predetermined ratio.

3,893,078

METHOD AND APPARATUS FOR CALCULATING THE CYCLIC CODE OF A BINARY MESSAGE

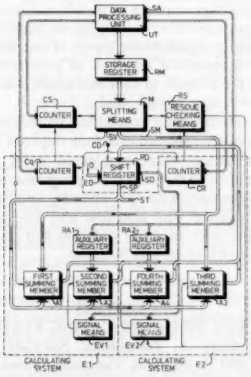
Jean Maurice Finet, Paris, France, assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 8, 1974, Ser. No. 458,922

Claims priority, application France, Apr. 13, 1973, 73.13501

Int. Cl.[2] G06F *11/12*

U.S. Cl. 340—146.1 AL **12 Claims**



1. A method of obtaining the cyclic code of a message which contains *n* binary information elements, said method comprising the steps of:

splitting up the message into a whole number *s* of words each containing *q* binary information elements plus a residue of *r* binary information elements, in such a way that the relationship $n = sq + r$ is satisfied, *r* being zero when *q* is a sub-multiple of *n*, and *r* being a whole number other than zero and less than *q* when *q* is not a sub-multiple of *n*, and

producing the cyclic code of the message thus split up, said step comprising the substeps of:

enabling a calculating system to obtain word by word, the cyclic code of the group of words, said code being constructed and fed successively into a shift register, and

checking the existence of said residue, the outcome of which is the delivery of either

a negative check signal when there is no residue, the cyclic code of the message being then contained in said shift register, or

a positive check signal when there is a residue, which causes an operation to commence which consists in obtaining from said calculating system the cyclic code for the group formed by said words and said residue, that is to say for the message, this cyclic code being fed into said shift register and being then contained in said shift register at the conclusion of this operation.

3,893,079

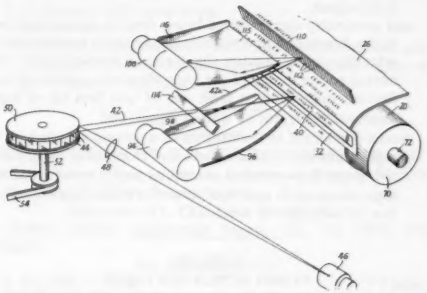
CHARACTER READING APPARATUS WITH IMPROVED DOCUMENT SCANNER

David H. Shepard, Rye, and Edward J. Gushue, Bedford Hills, both of N.Y., assignors to Cognitronics Corporation, Stamford, Conn.

Continuation of Ser. No. 624,445, March 20, 1967, abandoned. This application Aug. 21, 1970, Ser. No. 66,149

Int. Cl. G06k *9/12*

U.S. Cl. 340—146.3 F **13 Claims**



6. Character reading apparatus comprising:

means to support a document in cylindrical shape;

a laser producing a beam of coherent radiation;

scanning means for repetitively sweeping said laser beam along successive elements of the surface of said document, parallel to the elements of the cylinder, whereby the beam traverses straight-line sections of the document;

means to detect the laser radiation reflected from the document; and

means coupled to the output of said detecting means for analyzing the reflected radiation to determine the characters on the document.

3,893,080

MINUTIAE RECOGNITION SYSTEM

Allen P. Ho, and Hua-Tung Lee, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,211

Int. Cl.[2] G06K *9/12*

U.S. Cl. 340—146.3 E **35 Claims**

1. A system for recognizing the merger of two lines in a pattern consisting of lines and spaces between lines comprising:

scanning means for scanning said pattern and having a scanning output;

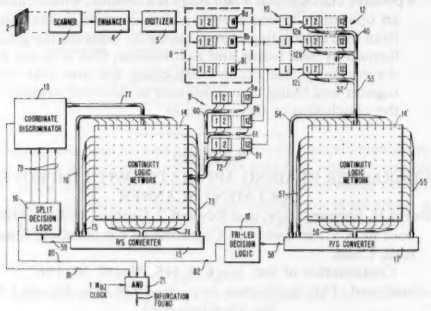
means for converting the output of said scanning means into binary signals representative of the contrast between said lines and said spaces; and

continuity logic means for forming conductive paths corresponding to the contrast between said lines and spaces including:

a matrix of logic elements;

a source of a continuity signal;

each said logic element in said matrix generating an output signal to the inputs of the logic elements located adjacent and orthogonal thereto in response to the combination of



a binary signal from said scanning means and said continuity signal;

said continuity signal source being directly connected only to the inputs of a first set of logic elements in said matrix; whereby said continuity signal source is electrically connected to the inputs of the logic elements outside of said first set only when at least one of said first set of logic elements generates an output signal; and

means connected to the outputs of a second selected set of logic elements in said matrix and responsive to conductive paths between said continuity signal source and the logic elements in said second set for providing an indication of a merger of two lines.

3,893,081

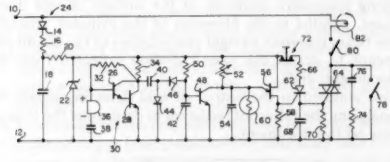
AUDIO ACTUATED LAMP

Charles L. Hopkins, 86 Beechwood, Shelbyville, Ky. 40065

Filed Apr. 5, 1974, Ser. No. 458,081

Int. Cl.[2] G08B *5/22*

U.S. Cl. 340—148 **17 Claims**



1. A system for electrically energizing a load upon receipt of an acoustic signal having predetermined characteristics including a fundamental frequency in addition to all significant harmonics thereof of the type typically generated by the sound of an alarm clock, telephone and the like, said system comprising means providing a connection to an alternating current power source, acoustic pick-up means, and a triggering device for supplying alternating current to said load, wherein the improvement comprises rectifier means for providing a direct current output to trigger on said triggering device, said rectifier means being connected to said alternating current power source connecting means, means for amplifying the output of said acoustic pick-up means, said amplifier means being connected to said rectifier means, means for establishing a minimum time delay period throughout the length of which the signal from the pick-up means must exist in order to energize the load, said amplifier means connecting the pick-up means to said time delay means, and said time delay means including means for activating said triggering device to supply alternating current to said load when such a predetermined acoustic signal is received for such a predetermined minimum time duration.

3,893,082

AUTOMATIC MATRIX CONTROL SYSTEM

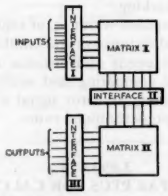
Anthony David Ryder, Bolton, England, assignor to Thomas Ryder & Son Limited, Bolton, England

Filed Dec. 18, 1973, Ser. No. 425,903

Claims priority, application United Kingdom, Dec. 28, 1972, 59860/72

Int. Cl. H04q *9/00*

U.S. Cl. 340—166 R **12 Claims**



1. In an automatic control system of the type comprising means for realising a set of Boolean relationships, in electrical form, between input and output signals, means for presenting input conditions in electrical form, and means for converting the output signals into mechanical or other required form, the improvements comprising:

a first diode matrix including a bus-bar lattice wherein selected point connections at intersections of the lattice for programming purposes are made by means of diodes, a first interface network of inverters connected to receive said input conditions in electrical form and provide inverted input signals to the inputs of said first diode matrix, a second interface network of inverters connected to receive the outputs of said first diode matrix and provide inverted output signals, and

a second diode matrix connected to receive as inputs the outputs of said second interface network and including a bus-bar lattice wherein selected point connections at intersections of the lattice for programming purposes are made by means of diodes, whereby said first diode matrix in combination with said first and second interface networks provides an AND function and said second diode matrix provides an OR function.

3,893,083

KEY INPUT INDICATING SYSTEM

Satoshi Teramura, 1, Tomigaoka, Nara-shi, and Kazuyuki Kurata, 1500 Tsutsui-cho, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 5, 1973, Ser. No. 337,855

Claims priority, application Japan, Mar. 6, 1972, 47-22889

Int. Cl. G06f *3/00*

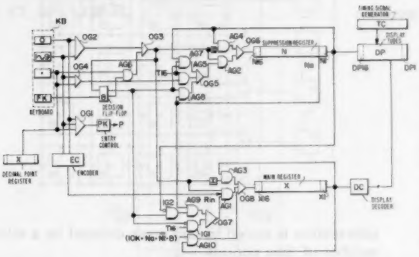
U.S. Cl. 340—172.5 **13 Claims**

1. A key input information indicating system comprising;

a plurality of keys for entering individual key inputs upon the manual depression thereof in first and second key entry modes;

a series of indicating elements for indicating the entered key input;

a counter responsive to the key inputs for counting the number of the manual depressions of the keys, the outputs of the counter being indicative of the number of key inputs to be actually indicated; and



a connection coupling the counter outputs with the indicating elements thereby inhibiting the indication of insignificant information in the series of the indicating elements; and detection circuit means connected between said keys and said counter for detecting whether a key depression is concerned with a first key entry mode or a second key entry mode.

3,893,084

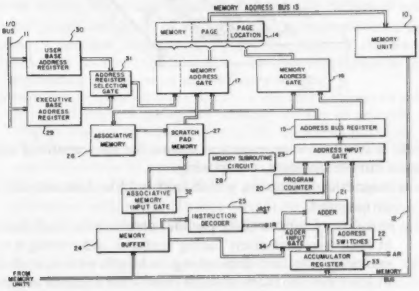
MEMORY ACCESS CONTROL SYSTEM

Alan Kotok, Waltham; Allan R. Kent, Framingham, and David A. Gross, Acton, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed May 1, 1973, Ser. No. 356,118

Int. Cl. G06f *13/08, 7/04, 11/12*

U.S. Cl. 340—172.5 **16 Claims**



1. In a data processing system including a memory unit for storing information as instructions or data in storage locations with a unique address designating each storage location and a processor unit for processing in succession instructions in the memory unit, said processor unit including means for defining a plurality of operating modes, a generator for transmitting an address to identify one of the memory locations and to initiate a memory reference, and use signal means responsive to the address generator for transmitting signals corresponding to predetermined use characteristics of the addressed location, the improvement of circuitry for checking each memory reference, said circuitry including:

A. a memory subroutine circuit in the processor unit for controlling information transfers between the processor unit and an addressed location, and

B. a testing circuit comprising

i. means activated upon the initiation of each memory reference for generating operating mode signals corresponding to the processor unit operating mode prevailing at that time, and

ii. a validating circuit responsive to the use signal means and operating mode signal means during each memory reference and including means for enabling said memory subroutine circuit to effect a transfer when the signals corresponding to the use characteristic and prevailing operating mode indicate that the use characteristic and operating mode are compatible and means for disabling said memory subroutine circuit when they are incompatible.

3,893,085

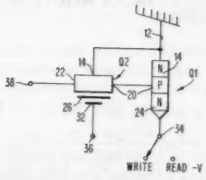
READ MOSTLY MEMORY CELL HAVING BIPOLAR AND FAMOS TRANSISTOR

Aage A. Hansen, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1973, Ser. No. 419,587

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **19 Claims**



1. A memory cell comprising:

an input node;

a transistor having collector, base, and emitter regions; and

a FAMOS device connected between the base region of said transistor and said input node.

3,893,086

ASYNCHRONOUS SPATIAL SHIFT REGISTER CIRCUIT

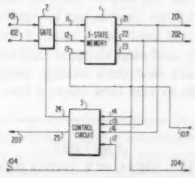
Takashi Nanya, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Dec. 11, 1973, Ser. No. 423,823

Claims priority, application Japan, Dec. 13, 1972, 47-125432

Int. Cl. G11c *19/00*

U.S. Cl. 340—173 R **7 Claims**



7. A shift register circuit means comprising a plurality of like stages, each said like stages adapted to store only one of three data items L_1, L_0 and L and having quiescent, set, and clear control states of operation, each said like stage comprising:

a. means responsive to a clear signal from a succeeding stage of said shift register for storing the data L in said state, provided said stage is in the quiescent state,

b. means responsive to the storage of data L in said stage for switching the control state of said stage from quiescent to set,

c. means responsive to the data stored in a preceding stage of said shift register, provided said data is L_1 or L_0, for entering said data from said preceding stage into said stage for storage therein when said stage is in the set condition,

d. means responsive to the storage of data L_1 or L_0 in said stage for switching said control state from set to clear control state,

e. a means responsive to said control state of said stage for applying a clear signal to said preceding stage, and

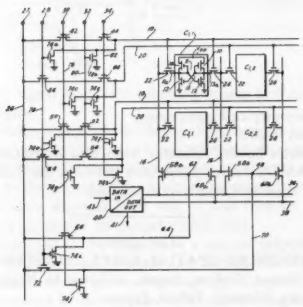
f. means responsive to said preceding stage storing the data L for switching the control state of said stage from clear to quiescent.

3,893,087

RANDOM ACCESS MEMORY WITH SHARED COLUMN CONDUCTORS

Lamar T. Baker, West Islip, N.Y., assignor to General Instrument Corporation, Clifton, N.J.

Filed Feb. 8, 1974, Ser. No. 440,699
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **22 Claims**



1. A random access memory comprising a pair of adjacent memory cells each having a data storage portion, a first control line, means conditionally connecting said first control line to said data storage portion of each of said cells, and second and third control lines connected to each of said connecting means, said second and third control lines being effective when respectively actuated to cause said connecting means to selectively connect said data storage portion of one or the other of said cells to said first control line.

3,893,088

RANDOM ACCESS MEMORY SHIFT REGISTER SYSTEM

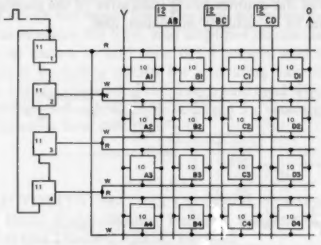
Antony G. Bell, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 163,682, July 19, 1971, abandoned.
This application Apr. 11, 1974, Ser. No. 460,259
Int. Cl. G11c *7/00, 19/00*
U.S. Cl. 340—173 R **16 Claims**

1. A shift register system comprising:

a. an array of random access memory cells arranged in rows and columns with the cells of a column having separate input and output lines common to all cells in a column; and

b. commutator means effective to provide a continuous sequence of read/write signals coupled to said array for sequentially reading rows of said memory cells and simultaneously writing information into adjacent rows of memory cells via common read/write lines whereby coded



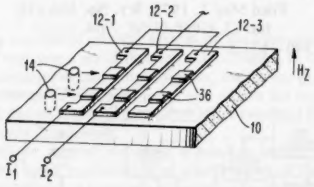
information is stored in said array delayed by a selected number of time periods.

3,893,089

TWO-PHASE PROPAGATION OF CYLINDRICAL MAGNETIC DOMAINS

George S. Almasi, Purdy Station, and George E. Keefe, Montrose, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 132,954, April 12, 1971, abandoned.
This application Apr. 3, 1973, Ser. No. 347,516
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **11 Claims**



1. A conductor propagation means for movement of magnetic bubble domains, comprising:

a magnetic medium in which said bubble domains can be propagated,

a plurality of substantially parallel conductors, each having at least two oppositely facing surfaces and having a substantially constant slope along its length with one of said at least two surfaces of each conductor located adjacent said magnetic medium for propagation of said bubble domains in said magnetic medium when current flows through sequentially displaced conductors wherein adjacent conductors are electrically unconnected to each other, said domains moving from one side of a conductor to the other side of said conductor when current flows through said conductor,

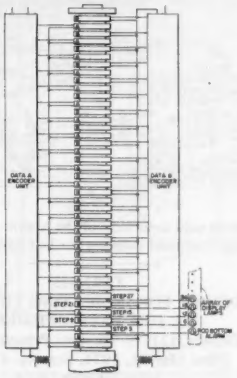
electrical means for providing current through said conductors to produce propagation magnetic fields, said current being provided through sequentially displaced conductors for movement of said bubble domains in said magnetic medium, and

magnetically soft material located with respect to said conductors such that the magnetic fields of said magnetically soft material add to said propagation magnetic field in the vicinity of said conductors, said magnetically soft material being in the form of discrete elements located over the surface of each said conductor remote from said magnetic medium.

3,893,090
POSITION INDICATION SYSTEM

James A. Neuner, Gibsonia, and Dirk J. Boomgaard, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 3, 1973, Ser. No. 320,773
Int. Cl. G08b *23/00*; G08c *19/06*
U.S. Cl. 340—188 R 5 Claims



1. A position indication system for displaying the relative position of a movable element with respect to fixed known coordinates comprising:

a plurality of sensory means arranged in first and second groups in corresponding configurations which are positioned proximate to and substantially equally spaced along the path of movement of the movable element, the individual locations of said sensory means defining the fixed known coordinates, said sensory means of said first group are alternately interleaved within the arrangement of said sensory means of said second group and each of said groups are responsive to the element's position to respectively provide discrete electrical outputs indicative of the element's position with respect to the corresponding locations of said sensory means;

means for combining the respective discrete outputs of said first and second groups of sensory means to provide a display output representative of the elements position;

means for monitoring said discrete outputs for malfunctions and responsive to a malfunction to disconnect either said first or second group exhibiting a malfunction from representation within said display output so that said display output is representative only of functioning groups of said sensors; and

means electrically connected to said monitoring means and combining means and responsive to a malfunction indicated by said monitoring means to alter the inputs to the combining means to align said display output to indicate the presence of the movable element substantially centered between two of said sensory means within said functioning group most nearly proximate a predetermined portion of the element.

3,893,091
ANNUNCIATOR CIRCUIT

Art Lee, El Paso, Ill., assignor to General Electric Company, New York, N.Y.

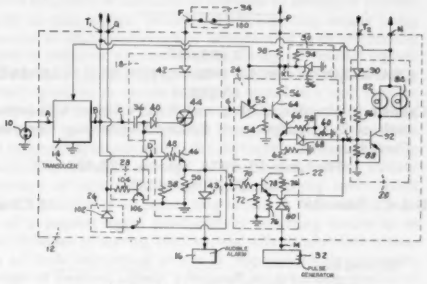
Filed Dec. 3, 1973, Ser. No. 420,870
Int. Cl. G08b *25/00*, *21/00*
U.S. Cl. 340—213.1 9 Claims

1. An annunciator circuit comprising:

a. means for generating an output level signal in response to a sensed abnormal signal condition;

b. an audible alarm;

c. means for actuating said audible alarm upon initial recognition of the output level signal from said generating means and means responsive to the output level signal for deactuating said audible alarm if said audible alarm is still actuated when the abnormal signal condition is corrected and the output level signal is extinguished; and

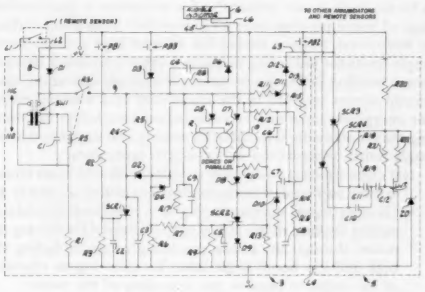


d. acknowledgement means electrically coupled to said alarm actuating means for deactuating said audible alarm only while the abnormal signal condition is sensed and for the duration of the output level signal.

3,893,092
FLASHING COLOR SEQUENCE ANNUNCIATOR SYSTEM WITH FAIL-SAFE FEATURES

Arthur R. Kessler, St. Louis, Mo., assignor to Electro Devices, Inc., St. Louis, Mo.

Filed Nov. 19, 1973, Ser. No. 417,037
Int. Cl. G08b *25/00*
U.S. Cl. 340—213.1 15 Claims



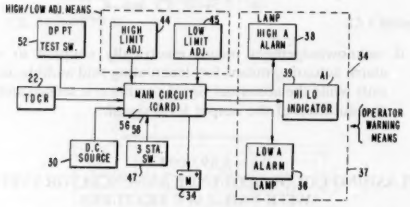
1. An annunciator system comprising a plurality of remote sensors for detecting normal and abnormal conditions and a central annunciator station to which said remote sensors are connected by leads, said annunciator station including a plurality of visual annunciators corresponding to respective remote sensors, each of said annunciators comprising alarm signalling means for providing alternate red and white flashing light signalling upon detection by the respective sensor of an abnormal condition, acknowledge signalling means responsive to manual acknowledge operation for causing the alternate red and white flashing light signalling to cease and for providing steady red light signalling, return-to-normal signalling means responsive to detection by the respective sensor of a normal condition following an abnormal condition for causing the steady red light signalling to cease and for providing steady green light signalling and reset means responsive to manual reset operation for causing the steady green light signalling to cease, said annunciator station further including at least one

flasher means for effecting said alternate red and white flashing light signalling by the alarm means of respective annunciators, and means responsive to failure of said flasher during detection by a respective sensor of an abnormal condition to cause bright white light alarm signalling by the respective annunciator and thereby provide unique light signalling in the event of failure of the flasher means.

3,893,093
CRANE BOOM ANGLE INDICATION AND WARNING SYSTEM

Candelario Paredes, Dallas, and Robert Horn, Richardson, both of Tex., assignors to Forney Engineering Company, Carrollton, Tex.

Filed July 25, 1973, Ser. No. 382,403
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 C **15 Claims**



1. An improved boom angle indicating and warning system for a crane, including: a boom angle transducer for producing an analogue output proportional to the boom angle position, a boom angle meter responsive for providing a visual indication of boom position over a range of 90° from a full vertical to horizontal, warning means for selected high and low boom angle limits for indicating respective upper and lower limits of boom position defining a range of permissable operation; main circuit means coupled to the transducer and warning means for energizing same and variable means coupled to the warning means manually selectable for setting said upper and lower angle limits, wherein the improvement comprises:

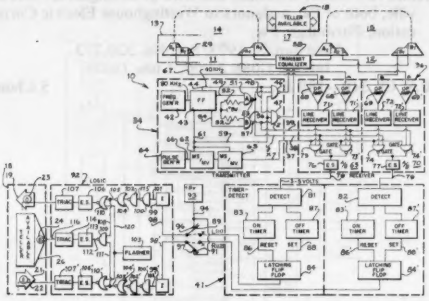
test circuit means switchably coupled with said main circuit means and said transducer for generating a slowly increasing signal corresponding to a simulated transducer output in place of the actual output thereof for driving the meter through the entire operating range including the high and low boom angle limits for allowing an operator of the crane to observe the operation of the meter.

3,893,094
CUSTOMER DIRECTING SYSTEM

Albin W. Thorson, San Carlos, and Henry D. Shultz, San Rafael, both of Calif., assignors to Bank Of America National Trust & Savings Association, San Francisco, Calif.

Filed Oct. 29, 1973, Ser. No. 410,683
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 B **5 Claims**

1. In a system for directing customers to available clerks positioned at their respective work stations, the combination comprising a counter disposed and adapted to separate each work station from an associated customer service region, an open pedestrian space in front of said counter, including said service regions, for movement of customers up to and for passing in front of said counter, electronic means in a continuously active state transducing signals at each service region for detecting the absence of a customer waiting thereat, display means operable between active and inactive states for directing customers to a service region free of customers when in said active state, and means for activating said display means

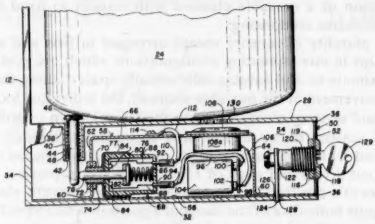


in response to said detection of the absence of a waiting customer within that field defining the last named service region.

3,893,095
ALARM DEVICE FOR INDICATING THE REMOVAL OF A FIRE EXTINGUISHER

Dennis E. DeJong, 1211 N. 7th Ave., Princeton, Minn. 55371

Filed May 31, 1974, Ser. No. 474,884
Int. Cl. G08b *13/14*
U.S. Cl. 340—272 **10 Claims**



1. An alarm device for indicating the removal of a fire extinguisher therefrom comprising a casing having an opening at the front, a drawer slidably received in said casing having a front wall for blocking said casing opening, an electric alarm in said drawer, a switch in circuit with said alarm, a horizontally reciprocal plunger for opening said switch in a first position thereof to inactivate said alarm and closing said switch in a second position thereof to activate said alarm, means biasing said plunger into said second position, a vertically reciprocal plunger extending downwardly through the top of said casing to a first position to retain said horizontal plunger in its first position, means biasing said vertical plunger upwardly to a second position to permit said horizontal plunger to assume its second position, and means for locking said drawer in said casing, whereby when a fire extinguisher is supported on said casing said vertical plunger is depressed sufficiently by said fire extinguisher to keep said horizontal plunger in its said first position and when said fire extinguisher is removed said horizontal plunger moves to its said second position.

3,893,096
HANDBAG ALARM SYSTEM

Domenick Tucci, 12 Ridge Rd., Mt. Kisco, N.Y. 10549, and Lewis Cantalupi, 79 Beaumont Circle, Yonkers, N.Y. 10710

Filed Dec. 19, 1973, Ser. No. 426,053
Int. Cl. G08b *21/00*
U.S. Cl. 340—283 **8 Claims**

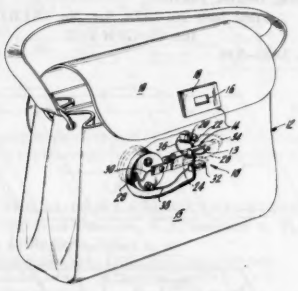
1. An alarm system for handbags having a clasp means for closing same, comprising:

means mounted on said handbag to provide a source of direct current;

alarm means mounted on said handbag and electrically connected to said direct current means;

deactivating switch means mounted on said handbag for interrupting the circuit from said direct current means to said alarm means; and

pressure responsive switch means mounted on a side wall of the handbag, said pressure responsive switch means having an external component extending outwardly from the side wall of the handbag, said external component being depressed upon the closing of the clasp means by the closing of the handbag to open the pressure responsive switch means and deactivate said alarm means, and said pressure responsive switch means closing to complete the circuit between said direct current means and said alarm means upon opening of the handbag, so that opening of the handbag without deactivating said deactivating switch means results in activation of said alarm means.

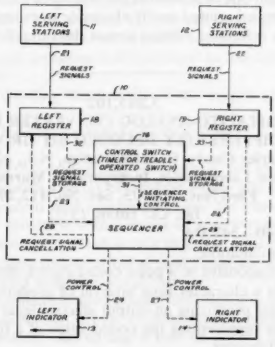


3,893,097

DISPATCHING SYSTEM CIRCUIT

Ronald Louis Lach, Arlington Heights, and William Jean Brier, Skokie, both of Ill., assignors to Elec-Tro-Tec, Inc., Elk Grove Village, Ill.

Filed June 3, 1974, Ser. No. 475,582
Int. Cl. G08g *1/09*
U.S. Cl. 340—286 **10 Claims**



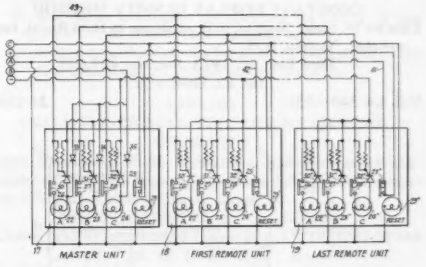
1. For use in a dispatching system having actuating means at each of two sets of serving stations for producing electrical request signals, and having two electrically actuated instructing means each for an associated set, a circuit comprising: control switch means, sequencing means and two register means, each said register means being associated with an instructing means, and being connected to the actuating means at an associated set of serving stations to store the request signals produced thereby, said sequencing means being in control circuit with each said register means and the instructing means associated therewith and being operable to control actuation of the latter in response to storage of request signals in said register means, said sequencing means being operable to alternately control actuation of both instructing means in response to simultaneous storage of request signals in both said register means, said sequencing means being further operable to cancel a request signal in a said register means following each actuation of its associated instructing means, said control switch means being in control circuit with said sequencing means and each said register means and being preconditioned upon storage of request signals to initiate operation of said sequencing means; whereby said circuit effects actuation of an instructing means in response to storage of a request signal produced by actuating means at its associated set of serving stations, and effects alternate actuation of both instructing means in response to simultaneous storage of request signals produced by actuating means at both sets of serving stations.

3,893,098

VISUAL SIGNALING SYSTEM FOR OFFICES

Richard T. Gomez, Chicago, and Christopher A. Otis, Northbrook, both of Ill., assignors to G & O Industries Inc., Chicago, Ill.

Continuation of Ser. No. 225,831, Feb. 14, 1972, abandoned. This application Dec. 20, 1973, Ser. No. 426,807
Int. Cl. H04m *11/04*
U.S. Cl. 340—311 **2 Claims**



1. A communication system comprising:

a. a plurality of interconnected signaling units adapted to be placed in different locations, each unit having a plurality of corresponding signal lamps;

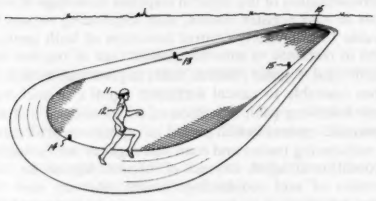
b. a plurality of actuating means on each unit, each associated with one signal lamp for simultaneously actuating said signal lamp and the corresponding signal lamp of all other units, each of said actuating means including a silicone controlled rectifier circuit and switching means for biasing said silicone rectifier circuit into a conductive condition whereby the signal lamps are maintained in an on condition regardless of subsequent state of said switching means; and

c. recognition means on each of said plurality of signaling units for simultaneously returning the silicone controlled rectifier circuits to a nonconductive state to turn off the signal lamps.

3,893,099
ATHLETIC TIMER

Jack A. Zoepfl, 3410 S. 292nd, Auburn, Wash. 98002

Filed July 25, 1973, Ser. No. 382,578
Int. Cl. G08b 3/10
U.S. Cl. 340—323 7 Claims



1. A system for providing an indication to a runner of his pace over a given course, comprising in combination:

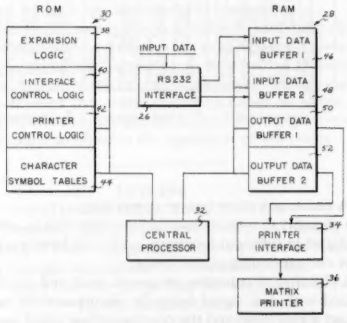
a plurality of markers positioned at spaced points along the course, successive markers defining therebetween successive portions of the course;

signal means adapted to be secured to the runner without substantially interfering with his pace and operative to provide tone bursts at regular intervals of time, said tone bursts being audible to the runner, each of said tone bursts having a time duration which is substantially shorter than said intervals of time, said intervals of time being sufficiently long that the runner covers substantially one of said portions of the course between markers in one of said intervals of time between successive tone bursts, the runner's position relative to the markers at each successive tone burst providing an indication of his pace over the course.

3,893,100
VARIABLE SIZE CHARACTER GENERATOR WITH CONSTANT DISPLAY DENSITY METHOD

Charles W. Stein, Nashua, N.H., assignor to Data Royal, Incorporated, Nashua, N.H.

Filed Dec. 20, 1973, Ser. No. 427,023
Int. Cl. G09f 9/32
U.S. Cl. 340—336 24 Claims



1. A method for producing variable size, matrix defined and point displayed characters comprising the steps of:

1. defining each character through a matrix having a predetermined number of components, said components each having one of a predetermined number of size independent, component shapes with each component being an element of the matrix;

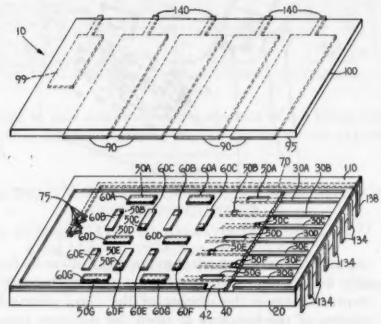
2. generating a plurality of binary display signals corresponding to said component shapes and the desired component size to be displayed with one binary state representing a display condition and the other binary state representing a no-display conditon; and,

3. applying said display signals to a point display with the display density of the points remaining the same regardless of the size of said character.

3,893,101
DISPLAY APPARATUS HAVING SEGMENTED INTEGRAL REGULATOR

David Glaser, Green Brook, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 20, 1974, Ser. No. 481,029
Int. Cl. G09f 9/32
U.S. Cl. 340—336 18 Claims



1. A display device comprising

a gas-filled envelope having a viewing window and an insulating base plate,

a plurality of groups of cathodes shaped in the form of segments of different characters to be displayed and disposed along the front surface of the base plate and having terminals extending out of the envelope,

an anode electrode associated with each group of cathodes for selective discharge therewith and having terminals extending out of the envelope,

an integral voltage reference device comprising at least a plurality of interconnected discrete cathode elements and an anode electrode associated with the elements within the envelope, and

means connected to the electrodes of the reference device for receiving a current sufficient to sustain a discharge between one or several of the reference cathode elements and the associated anode electrode to maintain thereby a stable reference voltage across the reference device.

3,893,102
DIGITAL-TO-ANALOG CONVERTER USING DIFFERENTLY DECODED BIT GROUPS

James Charles Candy, Convent Station, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

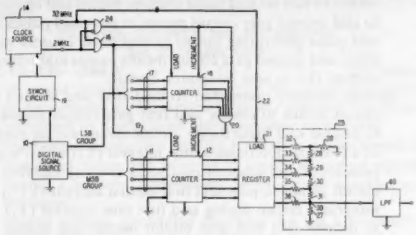
Filed Nov. 2, 1973, Ser. No. 412,296
Int. Cl.[2] H03K 13/02
U.S. Cl. 340—347 DA 18 Claims

1. In combination,

means, responsive to a pulse coded digital character occurring in a character time interval of predetermined duration, for producing an output analog signal at a first amplitude representing the coded value of a first portion of said character,

means for changing the amplitude of said analog signal to a second amplitude for a fraction of said time interval, and said changing means including means, responsive to a discrete second portion of said character, for fixing the magnitude of said fraction of said time to correspond to the coded value of said second part, the difference be-

tween said first and second amplitudes being independent of said coded values and being chosen so that the average

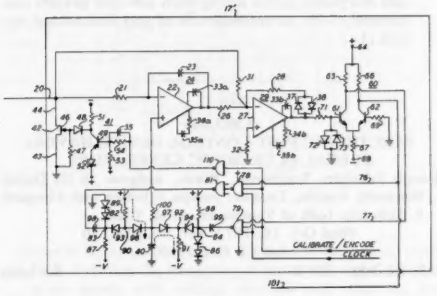


analog amplitude over said character time corresponds to the value represented by said digital character.

3,893,103
ELECTRICAL DRIFT CORRECTION SYSTEM

Robert S. Prill, West Paterson, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jan. 21, 1971, Ser. No. 108,348
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 CC **6 Claims**



1. Apparatus for reducing drift in an analog to digital conversion system including a serially connected operational amplifier-integrator and a comparator, said apparatus comprising:

means for coupling the signal to be converted, during those times when it is desired to convert said signal, to one input of said operational amplifier-integrator, and, during other times, coupling said one input to a point of ground potential;

means for deteting the polarity of the output of said comparator;

means for receiving a series of clock pulses;

a capacitor;

means, effective during said other times, for charging said capacitor with a series of positive pulses when said comparator output is of one polarity, and for charging in the opposite direction with a series of negative pulses when said comparator output is of a different polarity; and

means coupling one terminal of said capacitor to a second input of said amplifier-integrator;

said means effective during said other times including:

A. a level shifter circuit coupled to the output of said comparator, and having a pair of output lines therefrom, said circuit being adapted to provide logical levels of 0 and 1, respectively, on said output lines when said comparator output is of positive polarity and to provide logical evels of 1 and 0, respectively, on said output lines when said comparator output is of negative polarity;

B. a first set of gating circuits, adapted to be operative during said other times, coupled to receive said series of clock pulses and one of said output lines;

C. a second set of gating circuits, adapted to be operative during said other time coupled to receive said series of clock pulses and the other of said output lines, one of said gating circuits including an inverting means so that, during said other times, said first set of gating circuits provides a series of pulses of a fixed polarity when said comparator output is of one polarity, and said second set of gating circuits provides a series of pulses of said fixed polarity when said comparator output is of a different polarity;

D. a reference of ground potential,

E. means for coupling said reference of group potential to the opposite terminal of said capacitor;

F. a first diode means having its anode coupled to said ground potential and having its cathode coupled to a first junction terminal;

G. a second diode means having its cathode coupled to said ground potential and having its anode coupled to a second junction terminal;

H. a third diode means having its anode coupled to a third junction terminal and having its cathode coupled to said first junction terminal;

I. a fourth diode means having its cathode coupled to a fourth junction terminal and having its anode coupled to said second junction terminal;

J. a fifth diode means having its anode coupled to said third junction terminal and having its cathode coupled to said one terminal of said capacitor;

K. a sixth diode means having its cathode coupled to said fourth junction terminal and having its anode coupled to said one terminal of said capacitor;

L. a first and a second resistor for coupling said first and fourth junctions, respectively, to a negative voltage source;

M. a third and a fourth resistor for coupling said second and third junctions, respectively, to a positive voltage source;

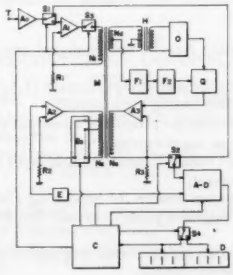
N. first capacitive means for coupling the output of one gating circuit to said first junction; and

O. second capacitive means for coupling the output of the other gating circuit to said second junction.

3,893,104
ANALOGUE-DIGITAL VOLTAGE MEASURING APPARATUS

Hikaru Furukawa; Shozo Kumazawa, and Noriyuki Wakayama, all of Gyoda, Japan, assignors to Takeda Riken Industry Company Limited, Tokyo, Japan

Filed June 12, 1973, Ser. No. 369,126
Claims priority, application Japan, June 13, 1972, 47-58240
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **2 Claims**



1. Apparatus for determining the level of an analogue input and displaying it on a digital display having multiple digital

positions including more significant digits and less-significant digits, comprising:

an input terminal;

a magnetic core having thereon an input winding, having a fixed winding, having a switching winding including switching means for selecting one of multiple taps, and having a magnetic flux detecting element;

a fixed reference potential source;

first means coupled to said source and operative to pass a constant current through said switching winding for the purpose of substantially cancelling the flux in the core;

an analogue-to-digital converter having an output; flux detecting means connected to said element and operative to deliver a dc signal representative of the flux level in said core;

second means coupled to the source and operative to pass a current through the fixed winding for the purpose of cancelling the remaining flux in the core; and

controller circuitry sequentially operative initially to connect said converter to said terminal to produce an initial output measurement of said analogue input and to couple said initial output for display to said more significant digit positions and to couple said initial output to said winding switching means to select a tap representing a number of turns proportional to the magnitude of said output, and the controller circuitry being operative subsequently to couple said terminal to said input winding and to couple said converter to receive a level proportional to said dc signal from said flux detecting means and to produce a subsequent output representing said remaining flux in the core and to couple said subsequent output to said less-significant digit positions for display.

3,893,105

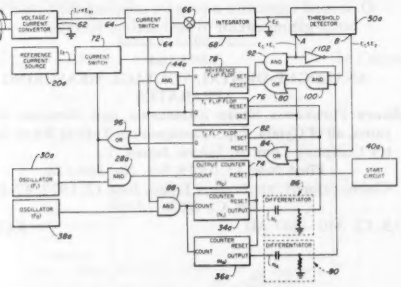
INTEGRATING TYPE ANALOG-DIGITAL CONVERTER

Philip D. Wasserman, Newbury Park, Calif., assignor to Tekelec, Inc., Oxnard, Calif.

Continuation-in-part of Ser. No. 249,077, May 1, 1972, abandoned. This application Dec. 18, 1973, Ser. No. 425,753

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 NT **11 Claims**



1. An integrating type of analog-digital converter system comprising:

an input circuit for producing a current (I_1) corresponding to an unknown analog input signal;

an integrator circuit for producing an output voltage (E_c) in response to an input current;

first gate circuit means connecting said input circuit to said integrator circuit;

a reference current source for producing a reference current (I_2) of opposite polarity to said first-named current (I_1);

second gate circuit means connecting said reference source to said integrator circuit;

first pulse counter means connecting said reference source to said integrator circuit;

second pulse counter means for producing a digital output representative of the number of pulses applied thereto;

pulse generating means for generating a series of pulses;

third gate circuit means connecting said pulse generating means to said second pulse counter means and connected to said second gate circuit means to pass said pulses from said pulse generating means to said pulse counter means when said second gate circuit means passes said reference current (I_2) to said integrator circuit;

further circuitry connected to said first and second gate circuit means to enable said first gate circuit means and to disable said second gate circuit means during portions of a first, predetermined time interval (T_1) which is independent of said input current, so as to cause said first gate circuit means to pass said first-named current (I_1) to said integrator circuit during said first time interval (T_1), and to disable said first gate circuit means and enable said second gate circuit means during a second, predetermined time interval (T_2) so as to cause said second gate circuit means to pass said reference current (I_2) to said integrator circuit during said second time interval (T_2); and

threshold detector means included in said further circuit means and connected to the output of said integrator circuit for causing said further circuitry to enable said second gate circuit means during sub-time periods within said first time interval (T_1) when the amplitude of said integrator output voltage (E_c) is below a selected voltage level (E_1) so as to introduce said reference current (I_2) to said integrator circuit during such sub-time periods concurrently with the introduction of said first-named current (I_1).

3,893,106

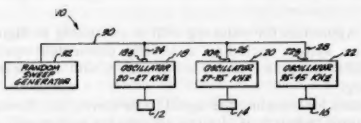
ELECTRONIC PEST-CONTROL DEVICE HAVING PLURAL ULTRASONIC GENERATORS

Joseph Schulein, Vancouver, Wash., assignor to H. Dutton Hayward, trustee, Tacoma; Joseph Schulein and Margaret A. Schulein, both of Vancouver, all of, Wash.

Filed Oct. 10, 1973, Ser. No. 405,150

Int. Cl. G08b *3/00*

U.S. Cl. 340—384 E **8 Claims**



1. An electronic pest-control device comprising

an electrically energizable, changeable frequency source of ultrasonic waves operable when energized to generate such waves within a predetermined range of frequencies, said source including a control terminal, the instantaneous voltage level on which determines the specific operating frequency of the source, and

energizing circuit means for said source operatively coupled thereto and operable to energize the same in a manner causing the source to generate waves having continuously randomly changing frequencies within said range, said energizing circuit means including means operatively connected to said control terminal for changing the instantaneous voltage level thereon, comprising a plurality of free-running sweep oscillators, each having a different operating frequency and each including an output terminal, integrating circuit means operatively connected to said output terminal and operable with said sweep oscillators running to produce a control voltage having a continuously randomly changing level, and means operatively interconnecting said circuit means and said control terminal for applying to the latter said control voltage.

3,893,107
SOUND SIMULATOR FOR DIESEL TRAIN ENGINE

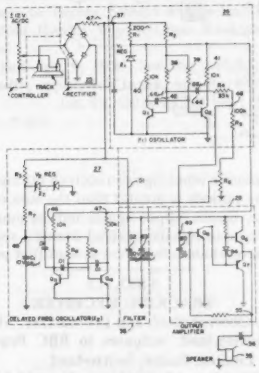
Walter John Schedler, 544 Wildwood Way, Santa Clara, Calif. 95050

Filed July 22, 1974, Ser. No. 490,906
Int. Cl. G08b *3/00*
U.S. Cl. 340—384 E **6 Claims**

1. A sound simulator for representing the sound of a diesel engine for a model train operated by power supplied to a track and regulated by a controller, said simulator comprising:

a first voltage controlled oscillator having a predetermined frequency range and adapted to supply an output signal having a frequency dependent on the power supplied to the train;

a second voltage controlled oscillator having a predetermined frequency range and adapted also to supply an output signal having a frequench dependent on the voltage supplied to the train;



means to delay the frequency response of the second oscillator such that the frequency of the output signal changes more slowly with voltage changes than does the frequency of the first oscillator, and

means to mix the signals of the first and second oscillators and broadcast an audible signal from the diesel train responsive to the oscillator signals thereby to simulate the diesel engine sound.

3,893,108
INTERNAL COMBUSTION ENGINE PROTECTION CIRCUIT

Lyle E. McBride, Jr., Norton, and William W. Bowman, North Easton, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1973, Ser. No. 426,850
Int. Cl. G08b *23/00*
U.S. Cl. 340—420 **28 Claims**

1. A protection circuit for an internal combustion engine comprising

a power source, ,

means for providing a first input signal which varies as function of a first engine parameter,

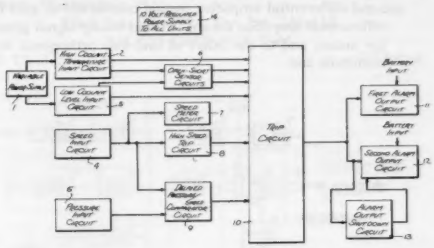
means for providing a second input signal which varies as a function of a second engine parameter,

means for manually adjusting the second input signal so that selected variations of said second input signal are representative of predetermined variations of said second engine parameter to adapt said protection circuit to said engine,

comparator means for comparing the second input signal to the first input signal to provide an alarm signal in response to a predetermined difference between the two input signals,

means for sensing the alarm signal and for providing an alarm indication, and

power source means connected to said first and second

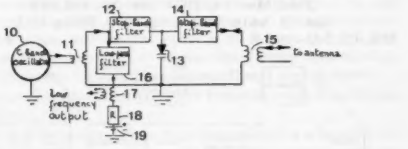


input signal means, to said adjusting means, to said comparator means and to said alarm signal sensing means for energization thereof.

3,893,109
SIMPLIFIED MOVING TARGET DETECTOR

Bernard Chiron, and Michel Fache, both of Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed Mar. 28, 1974, Ser. No. 455,891
Claims priority, application France, Apr. 2, 1973, 73.11718
Int. Cl.[2] G01S *9/42*
U.S. Cl. 343—5 PD **4 Claims**



1. A short range moving target detector based on Doppler effect comprising:

a. a transistor generator which operates at frequency f_o;

b. a semiconductor diode mixer and frequency multiplier with a ratio n;

c. a first coupling element between said generator and said mixer and frequency multiplier with a low impedance at f_o and a high impedance at nf_o;

d. a second coupling element between said mixer and frequency multiplier and a transmit-receive antenna with a low impedance at nf_o;

e. a low-pass filter between said mixer and frequency multiplier and a load for applying the difference frequency signal between the transmit and received signals.

3,893,110
DEVICE FOR CONVERSION AND DISPLAY OF RADAR RETURNS

David L. Drake, Treasure Cove, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 27, 1965, Ser. No. 459,986
Int. Cl. G01s *7/04*
U.S. Cl. 343—5 EM **6 Claims**

1. A display system for enhancing some patterns and suppressing other patterns comprising:

display means having an intensity and two orthogonal input terminals;

sweep signal generator means coupled to one of said two orthogonal input terminals;

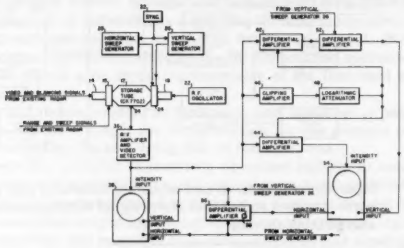
signal input means;

clipping means connected to said signal input means;

logarithmic variation means connected to said clipping means;

first differential amplifier means connected to said signal input means and to said logarithmic variation means;

second differential amplifier means connected to said first differential amplifier means, to said sweep signal generator means and to the other of said two orthogonal input terminals and

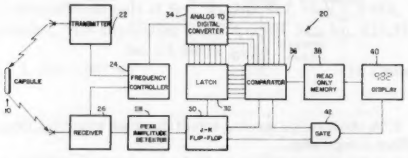


third differential amplifier means connected to said signal input means, to said logarithmic variation means and to said intensity input terminal.

3,893,111
SYSTEM AND METHOD FOR REMOTE MONITORING OF ANIMAL TEMPERATURE

John L. Cotter, Laconner, Wash., assignor to Albert F. Albert, Santa Barbara, Calif.

Filed Mar. 14, 1974, Ser. No. 451,009
Int. Cl. A61b *5/00;* **G01s** *9/56;* **H01q** *1/12*
U.S. Cl. 343—6.5 R **6 Claims**



5. An antenna for a remote monitoring system for animal body temperature, comprising:

a. a variable length antenna means for being subcutaneously implanted in an animal, said antenna means being such that its length variations are proportional to changes in the animal's body temperature, said antenna also being at least partially metallic in nature and encapsulated in a non-metallic substance.

3,893,112
COMPUTER FOR THRESHOLD OF TAU

Jeffrey Ellis Miller, Dallas, Tex., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 434,925
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 LC **11 Claims**

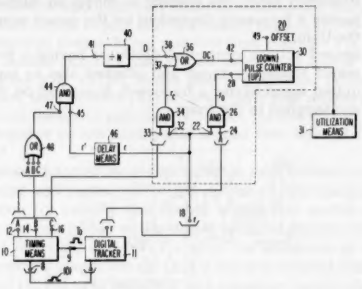
1. In a digital tracker for tracking reply signals from a remote station corresponding to interrogation signals from an interrogating station, including clock means for generating range counts, each count representative of a set distance, and range count gating means, responsive to said range counts, for providing interrogation reply gated range count output signals only during the intervals between the transmission of said interrogation signals and the reception of said corresponding replies, a system for generating a warning when the time to a projected impact between said interrogation and remote stations exceeds a predetermined value comprising:

a. timing means for generating a plurality of timing signals each of which being, respectively, indicative of contiguous time periods;

b. input means for receiving input signals representative of a time varying parameter;

c. divider means receptive of said representative input signals for generating one output signal for every N representative input signals received where N equals a specified constant;

d. accumulator means receptive of said representative input signals, said divider means output signals and said timing signals for providing an output signal when the number of

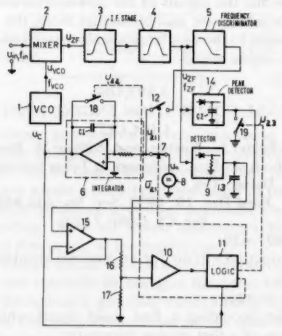


representative input signals received during a first one of said time periods is greater than the sum of the number of divider means output signals and the number of representative input signals received during a specified one of said time periods subsequent to said first period.

3,893,113
TRACKING RECEIVER

Paul D. Iten, Oberrohrdorf, and Jiri Mastner, Niederrohrdorf, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Dec. 18, 1973, Ser. No. 425,841
Claims priority, application Switzerland, Dec. 27, 1972, 18859/72
Int. Cl. G01s *9/44*
U.S. Cl. 343—7 A **4 Claims**



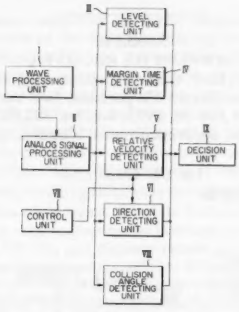
1. A tracking receiver comprising a mixer, a voltage-controlled oscillator having its output connected as one input to said mixer and the input signal connected as the other input to said mixer, an intermediate frequency stage having a pass band and which is connected to the output from said mixer, a frequency discriminator connected to the output from said intermediate frequency stage and which produces at its output a variable control voltage connected to said oscillator for varying the output frequency thereof during a search operation until the frequency of the output signal from said mixer

comes to lie in the pass band of said intermediate frequency stage, an instantaneous-value detector connected to the output of said intermediate frequency stage, a peak-value detector also connected to the output of said intermediate frequency stage for storing the peak value of the output therefrom, a comparator for comparing the outputs from said instantaneous and peak-value detectors, and means including switching means disposed in the connection between the output from said frequency discriminator and said oscillator for switching over the discriminator when the instantaneous output signal from said intermediate frequency stage approaches or reaches a specific fraction of the peak value of its signal stored in said peak-value detector during the preceding search operation covering the whole tuning range of the receiver.

3,893,114
METHOD AND DEVICE FOR ANTICIPATING A COLLISION

Teruo Yamanaka, Seto, and Kazuo Sato, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi, Japan

Filed Apr. 9, 1973, Ser. No. 348,941
Claims priority, application Japan, Apr. 8, 1972, 47-35339
Int. Cl. G01s *9/02*
U.S. Cl. 343—7 ED **27 Claims**



7. A collision anticipating device utilizing transmitted and reflected frequency-modulated continuous waves comprising

A. wave processing means comprising means for transmitting a wave to an object and for receiving a wave reflected therefrom,

B. analog signal processing means comprising

means for mixing reflected wave with a portion of a transmitted wave so as to derive a low frequency wave,

means for separating a first Doppler signal component from said low frequency wave, means for separating a fundamental wave component and harmonic components from said low frequency wave and for separating additional Doppler signal components from said fundamental wave component and harmonic components,

means for selecting at least two components which are different in phase from each other from said first and additional Doppler signal components,

wave shaping means for detecting a specified point in time in one period of said selected components and comparator means for detecting a point in time in one period at which said selected components are equal in intensity;

C. margin time detecting means comprising

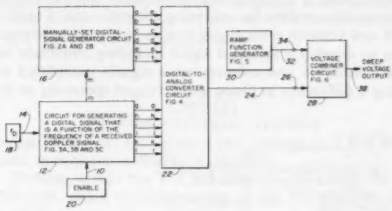
means for detecting a time interval between said two detected points in time and generating a signal when said time interval reaches a predetermined time interval; and

D. decision means for generating a signal when said means for detecting a time interval generates a signal.

3,893,115
SWEEP AND MEMORY CONTROL CIRCUIT

John L. Linder, Las Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1974, Ser. No. 436,415
Int. Cl.[2] G01S *9/02, 9/44*
U.S. Cl. 343—7 A **7 Claims**


MANUALLY-SET DIGITAL-SIGNAL GENERATOR CIRCUIT FIG. 2A AND 2B
DIGITAL-TO-ANALOG CONVERTER CIRCUIT FIG. 4
RAMP FUNCTION GENERATOR FIG. 5
VOLTAGE COMBINER CIRCUIT FIG. 6
SWEEP VOLTAGE OUTPUT
CIRCUIT FOR GENERATING A DIGITAL SIGNAL THAT IS A FUNCTION OF THE FREQUENCY OF A RECEIVED DOPPLER SIGNAL FIG. 3A, 3B AND 3C
ENABLE

1. A digital sweep voltage generator for providing sweep voltages to a doppler satellite tracking station receiver voltage-controlled oscillator to ensure searching in the correct doppler frequency range at a proper rate, comprising:

a. means for generating a continuous train of identical ramp function signals having an output;

b. a first digital-to-analog converter circuit having an input circuit and an output;

c. means for providing an enable signal;

d. means for providing a manually-set digital signal;

e. means for gating said manually-set digital signal to said input circuit of said first digital-to-analog converter circuit when said enable signal is at a logic 0 level, said means for providing an enable signal being connected to said means for gating said manually-set digital signal;

f. means for providing a doppler frequency signal having an output;

g. means for generating a digital signal that is a function of the frequency of said doppler frequency signal having an output circuit and an input, said input being connected to said output of said means for providing a doppler frequency signal;

h. means for gating said digital signal that is a function of the frequency of said doppler frequency signal to said input circuit of said first digital-to-analog converter circuit when said enable signal is at a logic 1 level, said means for providing an enable signal being connected to said means for gating said digital signal that is a function of the frequency of said doppler frequency signal, said means for gating said digital signal that is a function of the frequency of said doppler frequency signal having an input circuit and an output circuit;

i. a voltage combiner circuit having a first and a second input and an output, said output of said digital-to-analog converter circuit being connected to said first input, said output of said means for generating a continuous train of identical ramp function signals being connected to said second input, said output being said sweep voltage for said doppler satellite tracking station receiver.

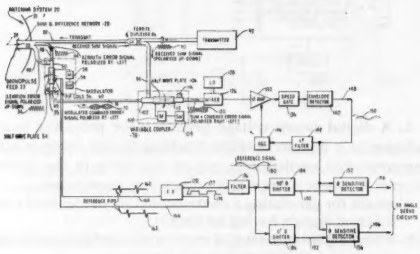
3,893,116
RADAR LOBING SYSTEM

Thomas Hudspeth, Malibu; Walter W. Maguire, Los Angeles; Harold A. Rosen, Santa Monica, and Donald E. Kreinheder, Inglewood, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 30, 1958, Ser. No. 783,994
Int. Cl. G01s *9/22;* **H01q** *15/24*
U.S. Cl. 343—16 M **19 Claims**

1. A radar system for receiving unmodulated directional echo signals at radio frequency from a source comprising

antenna means for developing from the echo signals at radio frequency a sum signal, an elevation error signal and an azimuth error signal each of the error signals being linearly polarized and having a voltage amplitude indicative of the direction of said source from an axis of said antenna, means responsive to the error signals for coupling the error signals in a common conductor with their planes of linear polarization orthogonal to each other, modulating means for simultaneously rotating the linearly polarized planes of said elevation and azimuth error signals at a desired angular velocity, polarization direction sensitive means for accepting a component of said elevation and azimuth error signal in a given direction of polarization to develop a resultant signal including amplitude modulated elevation and azimuth error signals modulated to develop a difference in phase and arranged spectrally as double



sideband signals, coupling means coupled to said polarization direction sensitive means and to said antenna means for combining the resultant error signal and the sum signal at radio frequency into a common signal having the sum signal arranged as the carrier wave to the double sideband signals, mixing means for heterodyning the common signal to intermediate frequency, amplifier means coupled to said mixing means for amplifying the intermediate frequency common signal, means coupled to said modulating means for developing a reference signal indicative of the angular velocity, provided by the modulating means and detecting means coupled to receive the reference signal and coupled to said amplifier means to respond to the amplitude of the common signal for developing output signals having characteristics indicative of the direction of said source from said antenna means.

3,893,117

MARINE RADAR TRANSMISSION AND RECEPTION SYSTEM

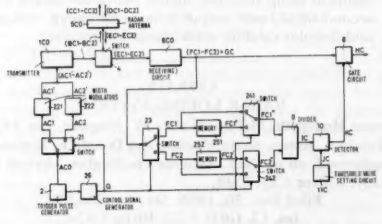
Tomiji Nirasawa, Kanagawa-ken, and Hiroshi Ota, Tokyo, both of Japan, assignors to Kabushiki Kaisha Tokyo Keiki, Tokyo, Japan

Filed May 8, 1973, Ser. No. 358,456

Claims priority, application Japan, May 10, 1972, 47-46033

Int. Cl. G01s *9/06, 7/28*

U.S. Cl. 343—17.1 R **4 Claims**



1. A marine radar transmission and reception system comprising:

a. means for sequentially generating first and second transmission pulse radar waves of first and second pulse widths, respectively;

b. an antenna for sequentially emitting the first and second transmission pulse radar waves in the same direction as first and second emitted pulse radar waves respectively and sequentially receiving first and second reflected pulse radar waves of the first and second emitted pulse radar waves;

c. a receiving circuit supplied with the output of the antenna;

d. means for producing first and second received pulse waves corresponding to the first and second reflected pulse radar waves from the output of the receiving circuit, respectively;

e. a gate circuit for gating the output of the receiving circuit or either one of the first and second received pulse waves; and

f. control means having a quotient circuit for producing the quotient output of the first and second received pulse waves, a setting circuit for deriving a predetermined threshold value output and a detector for detecting whether or not the quotient is in excess of the threshold value output;

g. in which the gate circuit is controlled with the output of the detector of the control means, whereby sea clutter eliminated received pulse radar waves are obtained from the gate circuit.

3,893,118

DOPPLER ILS RECEIVER

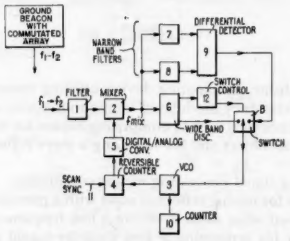
Francis Gile Overbury, Cuffley, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed July 26, 1973, Ser. No. 382,957

Claims priority, application United Kingdom, Aug. 3, 1972, 36231/72

Int. Cl.[2] G01S *1/38*

U.S. Cl. 343—106 D **5 Claims**



1. A Doppler navigation system including a ground beacon having an array of commutated antenna elements and at least one airborne receiver responsive to the radiation from said array to determine the angular position of said receiver with respect to said beacon, comprising:

first means within said receiver for determining a Doppler frequency signal representative of said angular position, said signal having a spectrum including two relatively large and substantially equal magnitude spectral lines;

and second means operatively associated with said first means, including means for frequency tracking said angle representing signal, said second means also including frequency conversion means responsive to a variable signal generated by said frequency tracking means and to said angle representing signal to produce an output signal within a fixed passband centered at a frequency midway between said two relatively large spectral lines representing said Doppler signal after conversion.

3,893,119

DISTANCE MEASURING APPARATUS INTEGRATED IN AN AIRCRAFT LANDING SYSTEM OF THE ILS TYPE

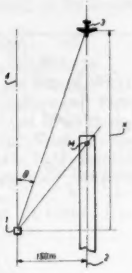
Gilbert Montel, Palaiseau, France, assignor to Agence Nationale de Valorisation de la Recherche "Anvar", France

Filed Sept. 20, 1973, Ser. No. 399,092

Claims priority, application France, Sept. 20, 1972, 72/33283

Int. Cl. G01s 1/16

U.S. Cl. 343—108 R 10 Claims



1. Distance measuring apparatus integrated in an aircraft landing system of the ILS type utilizing the differential measuring technique wherein a deviation signal is alternately applied and suppressed to a network of lateral aerials of a glide station, the distance measuring apparatus measuring the bearing angle of the approaching aircraft with respect to the glide station when the aircraft is on the glide path and comprising at the glide station a pair of lateral aerial means operatively associated with the low aerial of the glide station and intermittently emitting sidebands corresponding to the modulation of the glide signal at a low frequency which is sufficiently high with respect to the conventional ILS frequencies of 90 and 150 Hz, and distance means connected to the low frequency output of a conventional ILS receiver on board the aircraft for providing a distance indication in accordance with the variation in the degree of modulation of the low frequency signal received by the ILS receiver.

3,893,120

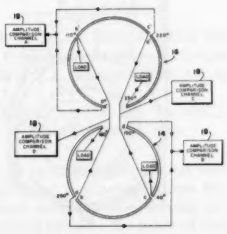
OMNIDIRECTIONAL RING ANTENNA FOR EW AMPLITUDE COMPARISON DIRECTION FINDING

Richard S. Trenam, Adelaide, Australia, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 13, 1970, Ser. No. 63,375

Int. Cl.[2] G01S 3/28

U.S. Cl. 343—119 3 Claims



1. Apparatus for measuring the direction of incoming RF signals comprising:

an omnidirectional ring antenna for receiving said RF signals,

said antenna consisting of a ring of air-spaced coaxial cable and a selectively predetermined number of radiating elements symmetrically spaced and disposed about said coaxial cable in an energy coupling relationship with respect to said coaxial cable,

probe means for sampling the coupled energy level at selectively predetermined points on said ring antenna, and

means for comparing the sampled energy levels derived by said probe means whereby the direction of said incoming RF signals can be determined.

3,893,121

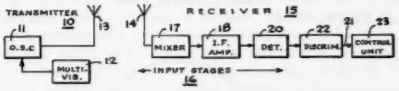
REMOTE CONTROL SYSTEM

Kenneth M. Ringer, Longmont, Colo., assignor to A.R.F. Products, Incorporated, Raton, N. Mex.

Division of Ser. No. 178,376, Sept. 7, 1971, Pat. No. 3,747,108, which is a continuation of Ser. No. 840,806, July 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 749,746, Aug. 2, 1968, abandoned. This application June 13, 1973, Ser. No. 369,586

Int. Cl. H04b 7/00

U.S. Cl. 343—225 4 Claims



1. A remote control system, comprising a transmitter including a carrier oscillator for producing a radio frequency carrier signal, modulation oscillation means for modulating said carrier signal with modulation frequency signals in the high audio frequency range, pulse generator means for producing repetitive pulses at a predetermined repetition rate corresponding to a low audio frequency range, means connected to said pulse generator means and operable by said pulses for repetitively changing the frequency of said modulation frequency signals between first and second substantially different modulation frequencies in the high audio range, a receiver including an input circuit for receiving and demodulating said carrier signal thereby producing first and second tone signals alternating at the pulse generator rate, an output control device, and means for actuating the output control device electrically connected between the input circuit and the output control device, said actuation means impressing an actuating signal on the output control device only responsive to audio signals of the frequency of the first and second modulation frequencies which alternate between the first and second modulation frequencies at the rate of the pulse generator.

3,893,122

WAVE GUIDE ANTENNA HORN

John D. Feeney, St. Paul, Minn., assignor to Western Electric Company, Incorporated, New York, N.Y.

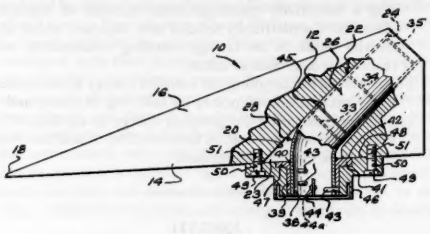
Filed Sept. 27, 1957, Ser. No. 687,597

Int. Cl.[2] H01Q 1/28

U.S. Cl. 343—705 7 Claims

5. An antenna horn for a radar-controlled device comprising a streamlined body having surfaces defining an aperture extending through said body, a composite wave guide disposed in the aperture in said body, said composite wave guide having a straight section and a curved section with an end portion of each section secured together in coaxial alignment, means in one of said sections for modifying electro-magnetic waves passing therethrough, said surfaces of said body being

shaped to support one end of the composite wave guide against lateral movement, therethrough, and means for securing the other end of said composite wave guide to said body against movement in any direction.



3,893,123

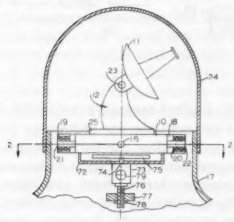
COMBINATION GYRO AND PENDULUM WEIGHT STABILIZED PLATFORM ANTENNA SYSTEM

Albert H. Bieser, Garland, Tex., assignor to B E Industries, Garland, Tex.

Filed Sept. 12, 1973, Ser. No. 396,513

Int. Cl. H01q *3/00*

U.S. Cl. 343—706 **21 Claims**



1. In an antenna mounting system: a plural axis antenna pedestal including a vertical axis and having a right angled gimbaled, combination gravity slaved and gyro stabilized platform; the right angled axes of the gimbaled platform lying in a common plane intersecting the symmetrical axis of the platform; gyro motor means and rotor means vertically mounted for rotor rotation in a plane normal to the vertical axis of the pedestal; counterweight mass means positioned below the gimbaled plane of said platform; and with the mass and positioning of said counterweight mass means insuring positioning of the center of gravity of the entire gimbaled platform along with antenna means and other structure supported by the gimbaled platform, below the gimbaled plane of said platform; and wherein said antenna means and antenna mounting structure is rotatably supported on said gimbaled platform for rotation about said vertical axis.

3,893,124

R-F ANTENNA APPARATUS FOR GENERATING CONICAL SCAN PATTERN

Jabus Barker, Utica, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Apr. 26, 1974, Ser. No. 464,430

Int. Cl. H01q *13/10*

U.S. Cl. 343—768 **8 Claims**

1. A phase-scanned r-f antenna comprising, in combination:

a four quadrant antenna;

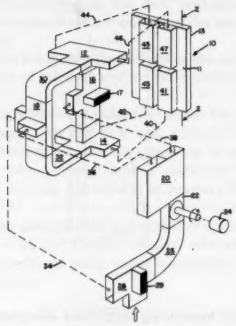
first and second 180° hybrid couplers connected to said antenna, the four branching arms of said couplers being connected to different ones of said antenna quadrants;

a third 180° hybrid coupler having its branching arms connected to the E-plane arms of said first and second couplers;

a fourth 180° hybrid coupler having its branching arms connected to the H-plane arms of said first and second couplers;

a 90° hybrid coupler having one pair of adjacent ports connected to the H and E-plane arms of said third and fourth 180° hybrid couplers respectively;

a fifth 180° hybrid coupler having its branching arms connected respectively to the H-plane arm of said fourth 180° coupler and to a port of said 90° coupler which is opposite the port connected to said third 180° coupler.



a phase shifter connected in the circuit between the branching arm of said fifth 180° coupler and said 90° coupler;

r-f energy operating means connected to the H-plane arm of said fifth 180° coupler; and

means for actuating said phase shifter whereby the axis of the beam pattern of said antenna is caused to scan in a path describing at least a segment of a cone.

3,893,125

MOTOR OPERATED TELESCOPIC ANTENNA FOR VEHICLES

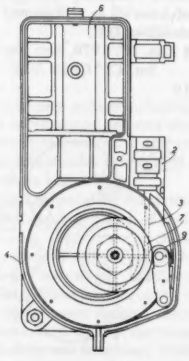
Michel De Bellomayre, 69 Avenue Raymond Poincare, 75 Paris, France

Filed Nov. 27, 1973, Ser. No. 419,427

Claims priority, application France, Nov. 29, 1972, 72.42384

Int. Cl. H01q *1/10*

U.S. Cl. 343—903 **11 Claims**



1. A device for actuating a telescopic antenna comprising a flat housing of annular shape having an interior periphery and an exterior periphery, a long, flexible cable of solid polymeric

material formed with evenly spaced indentations along its length with at least substantially circular cross-section in its non-indented parts, said housing having a central opening for reversibly receiving and storing said cable, a motor which reversibly actuates through the agency of a drive winch said cable in such manner that the longitudinal centerline of said cable forms a flat spiral within said housing, said drive winch having means for engaging with said cable indentations, cable guiding means in said housing for directing said cable into the housing from the interior of the spiral and in such manner that the ingoing cable thrusts the previously formed cable spiral against the inner periphery of the housing.

3,893,126

PROCESS AND DEVICE FOR WRITING BY INK JET

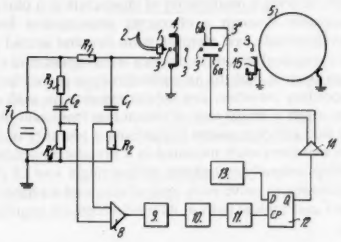
Enzo Ascoli, Lausanne; Raymond Pidoux, Pully, and Marc Perdrix, Champagne, all of Switzerland, assignors to Paillard S.A., Sainte-Croix (Vaud), Switzerland

Filed Aug. 14, 1973, Ser. No. 388,274

Claims priority, application Switzerland, Sept. 12, 1972, 13412/72

Int. Cl. G01d *15/16*

U.S. Cl. 346—1 **8 Claims**



1. A process for writing by means of a jet of ink, comprising: applying an electric field to extract a succession of discrete droplets of ink from a delivery nozzle to form a jet of ink directed generally towards a writing surface and passing between deflecting electrodes; applying a control voltage across the deflecting electrodes to deflect the jet of ink to trace signs on the writing surface, said control voltage having abrupt variations corresponding to discontinuities in the signs being traced, determining the individual passages of the droplets and making said abrupt variations in the control voltage coincide with instants when no droplet is located between said deflecting electrodes.

3,893,127

ELECTRON BEAM RECORDING MEDIA

Michael Kaplan, Princeton, and Edmund Benjamin Davidson, Short Hills, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,213

Int. Cl. G01d *15/34*

U.S. Cl. 346—1 **16 Claims**

1. In a method of recording information whereby a modulated beam of electrons is scanned across the surface of a resist material which becomes more soluble in the developer solvent when impinged upon by the beam of electrons and the resist material is developed with a developer solvent so as to remove the solubilized portions thereof, the improvement which comprises employing as the resist material a film of a copolymer of SO_2 and an olefin.

3,893,128

RECORDING APPARATUS FOR ELECTROGRAPHIC IMAGING

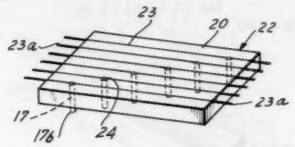
Hans Bäuerlen, Gerlingen, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Division of Ser. No. 256,976, May 25, 1972, Pat. No. 3,798,756. This application Nov. 23, 1973, Ser. No. 418,773

Claims priority, application Germany, May 26, 1971, 2126043

Int. Cl.² G03G *15/00*

U.S. Cl. 346—74 ES **6 Claims**



1. A recording head for recording on a recording medium, comprising a carrier; a plurality of one-piece electrically conductive wires embedded in said carrier in closely spaced parallel relationship, each of said wires having opposite end portions projecting beyond said carrier and adapted to serve as writing electrodes; and a plurality of electrically conductive contact pins, each partially embedded in said carrier in a direction substantially perpendicular to said wires and having a first end connected to said wires intermediate said end portions thereof and a second end projecting outwardly beyond said carrier, one of said end portions of the respective wire being adapted to conduct electrical signals to the other of said end portions of the same wire so that said other end portion serves as a writing electrode and, at the option of a user, said second end of each pin being adapted to conduct electrical signals to the associated wire so that either or both of said end portions of the wire serve as writing electrodes for interchangeably or simultaneously writing on the recording medium.

3,893,129

LIGHT BEAM RECORDING DEVICE

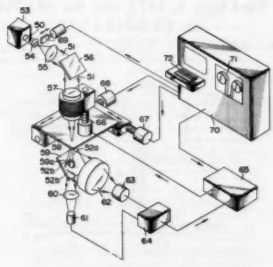
Hirotoshi Endo; Hiroshi Oono, and Shigenori Oosaka, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 24, 1974, Ser. No. 491,504

Claims priority, application Japan, July 27, 1973, 48-85333

Int. Cl. G02b *7/02;* **G01d** *15/14*

U.S. Cl. 346—77 E **13 Claims**



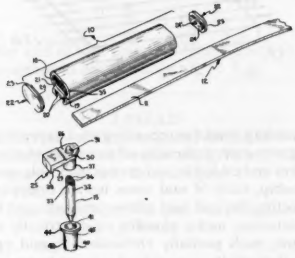
1. A light beam recording device comprising a light source which emits a light beam of high intensity which is able to deform a thermoplastic material, an optical system for focusing the light beam on the thermoplastic recording medium, a photoelectric sensing means provided behind the recording medium for receiving light passing through the recording

medium, and means for controlling said optical system to focus the light beam accurately on the recording medium in accordance with the output of said photoelectric sensing means.

3,893,130
RECORDER PEN

Charles A. Browning, Chicago; Gilbert G. Perrigo, Roselle, both of Ill., assignors to Northern Illinois Gas Company, Aurora, Ill.

Continuation of Ser. No. 122,759, March 10, 1971 abandoned. This application July 20, 1973, Ser. No. 381,209
Int. Cl. G01d *15/16*
U.S. Cl. 346—140 **15 Claims**

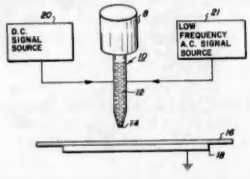


1. A recorder pen for a recording instrument comprising a cartridge having a closed chamber, means for maintaining a supply of fluid in said chamber, means for venting said closed chamber, a tubular member carried by the cartridge and having a capillary passageway therethrough communicating with the inside of said chamber, a point formed on said tubular member with said passageway communicating with said point, said fluid in said chamber flowing through said passageway to said point, said cartridge having a channel means formed on one side thereof for receiving the end portion of an arm of the recording instrument, and a retainer having a body portion for closing the one end of the chamber in the cartridge and having a pair of legs extending from said body portion, said legs engaging opposite sides of said cartridge to hold said retainer on said cartridge in said closed relationship, one of said legs extending into retaining relationship with said channel means.

3,893,131
INK PRINTER

Julius Perel, Altadena, and John F. Mahoney, South Pasadena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 4, 1973, Ser. No. 393,760
Int. Cl. G01d *15/18*
U.S. Cl. 346—140 **10 Claims**



1. A fluid printer in which substantially all ink drops produced are used for printing on a recording medium comprising:

a nozzle containing a conductive fluid,

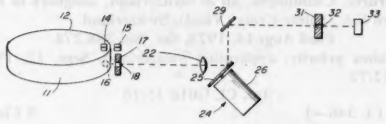
an electrode disposed adjacent said nozzle and maintained at a fixed potential, and

pulsing means for applying to said nozzle a voltage waveform having a voltage pulses of sufficient magnitude to produce an electrostatic field between said nozzle and said electrode of sufficient magnitude to overcome the liquid surface tension of the nozzle and draw ink from the nozzle to the recording medium, each of said pulses having a peak amplitude portion and a trailing edge portion that decrease in magnitude at a variable rate.

3,893,132
PHOTOCOMPOSING MACHINE

Peter R. Ebner, Lowell, Mass., assignor to Graphic Systems, Inc., Lowell, Mass.

Filed Feb. 15, 1974, Ser. No. 442,807
Int. Cl. B41b *21/28*
U.S. Cl. 354—13 **4 Claims**

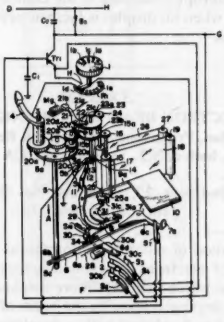


1. A photocomposing machine comprising a rotatable character store bearing a multiplicity of characters in a plurality of rows rotatable through a character presentation location, means to illuminate said characters on demand in said plurality of rows, optical means to project an image of said characters in an optical path to an optical output movable over a photorecording member, and selector means in said optical means to select a single row of characters from said plurality or rows, said selector means comprising a plurality of optical selection members each mounted in a predetermined angular relationship uniquely associated with a single row of characters, and means to move each optical selection member selectively into said optical path in its predetermined angular relationship.

3,893,133
ELECTRICALLY CONTROLLED SHUTTER FOR USE IN PHOTOGRAPHIC CAMERAS

Kayoshi Tsujimoto, and Toru Matsui, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 5, 1973, Ser. No. 403,831
Claims priority, application Japan, Oct. 7, 1972, 47-100323; June 23, 1973, 48-70464
Int. Cl. G03b *7/08, 9/58*
U.S. Cl. 354—24 **13 Claims**



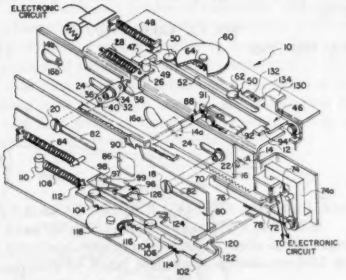
8. An electrically controlled shutter for a photographic camera, comprising:

a first timing circuit for setting exposure timing commensurate with the brightness of a photographic object;
a second timing circuit for manually setting exposure timing;
an exposure time control circuit for controlling exposure in accordance with the exposure timing of said first or second timing circuit;
means for closing the shutter in response to said exposure time control circuit;
a first manually operative member settable to a desired position for selecting exposure time and for selectively connecting at least said second timing circuit to said exposure time control circuit; and
a second manually operative member for setting automatic exposure control and for connecting said first timing circuit to said exposure time control circuit, said second manually operative member is at least movable from a rest position to an operating position to connect said first timing circuit to said exposure time control circuit for over-riding the setting of said first manually operative member;
a retaining member for retaining said second manually operative member in said operating position; and
means for releasing said second manually operative member from being retained in said operating position thereof by said retaining member.

3,893,134
EXPOSURE CONTROL APPARATUS

Gerhard Bräuning, Ruit, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 7, 1973, Ser. No. 413,751
Claims priority, application Germany, Nov. 11, 1972, 2255329
Int. Cl. G03b *7/08*
U.S. Cl. 354—30 **5 Claims**

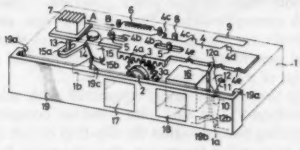


1. In a camera, exposure control apparatus comprising:
diaphragm means constructed and mounted for movement for forming an exposure aperture of a size ranging between a minimum and a maximum size;
shutter means, mounted for movement between open and closed positions, for controlling the passage of light through said exposure aperture;
means for actuating said shutter means to move to said open position a preselected time after actuation of said diaphragm means;
light responsive means for arresting movement of said diaphragm means at a position wherein an exposure aperture of size related to scene brightness is formed; and
means, cooperative with said light responsive means and said shutter means, for actuating said shutter means to close said exposure aperture a preselected time after arrest of said diaphragm means.

3,893,135
APPARATUS FOR MOVING LENS OF CAMERA FOR FOCUSING

Toru Matsui, Sakai; Akira Yoshizaki, Osaka, and Yasuzi Kogure, Kawanishi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 4, 1974, Ser. No. 438,959
Claims priority, application Japan, Feb. 21, 1973, 48-22641
Int. Cl.[2] G03B *13/20*
U.S. Cl. 354—167 **10 Claims**

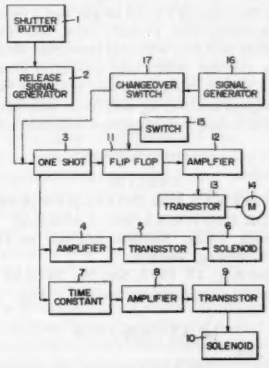


1. An apparatus for adjusting the focus of the main taking lens of a camera comprising:
a movable focussing member;
a focussing ring for effecting the focussing movement of the main taking lens in operative relation to the movement of the focussing member; and
a lens unit including a lens for special photography and a portion for setting the main taking lens to a predetermined focussed position which is dependent on the focal length of the special photography lens, and adapted to be set to a position for special photography in which the optical axis of the special photography lens registers with that of the main taking lens, the main taking lens setting portion of the lens unit, when the unit is positioned for special photography, acting on the focussing member to thereby set the main taking lens to said predetermined position.

3,893,136
MOTOR DRIVEN CAMERA

Kunio Ando, Warabi, and Ryuzo Mukoyama, Kitamoto, both of Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Jan. 17, 1974, Ser. No. 434,097
Claims priority, application Japan, Jan. 20, 1973, 48-9025
Int. Cl. G03b *19/04*
U.S. Cl. 354—173 **16 Claims**



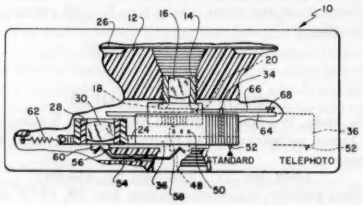
1. In a motor driven camera in which the shutter is charged and film is fed by the power of a motor built in the camera body, the improvement comprising:

a power supply,
an electric motor associated with a shutter charge means and a film feed means for charging the shutter and feeding the film by the rotation thereof,
a flip-flop circuit connected between the power supply and the electric motor to selectively energize the motor,
a shutter release signal generating means which generates a signal upon depression of a shutter button,
a film wind-up completion signal generating means which generates a signal upon completion of the shutter charge and the film feed, and
a one shot multivibrator which generates a pulse having a width corresponding to the exposure time, said one shot multivibrator being connected with said shutter release signal generating means for generating said pulse upon receipt of a signal therefrom,
said flip-flop circuit being connected with said one shot multivibrator and said film wind-up completion signal generating means so that the flip-flop circuit is put into a state to energize the motor when the pulse from the one shot multivibrator falls and is put into the other state to deenergize the motor upon receipt of a signal from said signal generating means.

3,893,137
DUAL LENS CAMERA FOCUS MEANS

Helmut Ettischer, 60 Wangen, Posthach 369, 7 Stuttgart, Germany

Filed June 10, 1974, Ser. No. 477,580
Claims priority, application Germany, June 14, 1973, 2302650
Int. Cl. G03b *3/00*
U.S. Cl. 354—197 **2 Claims**



1. In a camera having a focusable primary lens, a converter lens movable into and out of axial alignment with said primary lens to change the camera's focal length and a movable focus member for focusing said primary lens; the improvement comprising means movable with said converter lens for covering said focus member when said converter lens is out of alignment with said primary lens, said covering means being moved to a position uncovering said focus member when said converter lens is moved into alignment with said primary lens.

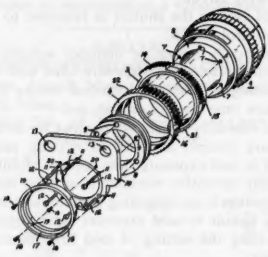
3,893,138
ACCESSORY SOCKET FOR INTERCHANGEABLE LENS FOR PHOTOGRAPHIC CAMERAS

Ralf Sture Frode, Pixbo, Sweden, assignor to Fritz Victor Hasselblad, Goteborg, Sweden

Filed Aug. 13, 1973, Ser. No. 387,633
Claims priority, application Sweden, Aug. 28, 1972, 11126/72
Int. Cl. G03b *17/56*
U.S. Cl. 354—286 **6 Claims**

1. An interchangeable lens including an accessory mount for supporting accessories laterally on said lens, said lens having at least one adjusting mechanism, said mount comprising

a plate having
an aperture therein,
means for mounting said plate on said lens forward of the adjusting mechanisms thereof and with said aperture

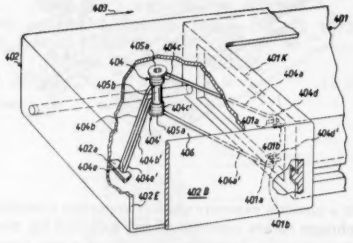


aligned with the optical axis of the lens, said plate having a lateral portion positioned adjacent the lens body,
and positioning means for fixing the position of said mounting plate relative to said adjusting mechanism.

3,893,139
PHOTOGRAPHIC APPARATUS WITH EXPANSIBLE HOUSING

Alfred Winkler, Munich; Dieter Engelsmann, Unterhaching, and Rolf Schröder, Baldham, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 23, 1974, Ser. No. 491,143
Claims priority, application Germany, July 31, 1973, 2338776
Int. Cl.[2] G03B *17/02*
U.S. Cl. 354—288 **10 Claims**

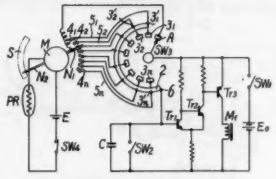


1. In a photographic apparatus, particularly in a still camera, a combination comprising a housing including a first section and a second section supported by and reciprocable relative to said first section between first and second positions in which one of said sections respectively conceals and exposes a portion of the other of said sections; and means for biasing said second section to one of said positions, including at least one torsion spring having first and second legs respectively bearing against said first and second sections and an unsupported arcuate portion connecting said legs and being disposed between said sections.

3,893,140
AUTOMATIC EXPOSURE TIME CONTROL APPARATUS FOR CAMERA

Kintaro Yata, Ikeda, and Yoshio Kuramoto, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 12,562, Feb. 10, 1970, abandoned. This application Mar. 1, 1972, Ser. No. 231,041
Int. Cl.[2] G03B 7/08
U.S. Cl. 354—50 **7 Claims**



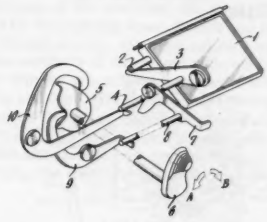
1. A network in an automatic exposure time controlling device for a camera comprising an automatic terminal and a group of terminals for manual exposure setting to be selected by a manual selector, said terminals of said group of terminals being connected respectively to a resistance means by lead wires which are spaced along the length thereof and through which resistance values corresponding to respective exposure times are obtained stepwise; another group of terminals to be selected automatically at the position which corresponds to the intensity of incident light from the subject and including an electrically conductive member connected to said automatic terminal and occupying a position responsive to said incident light intensity for engagement with a corresponding terminal of said other group; and shutter actuating means for closing a shutter to be controlled by an electromagnet which is operated by an RC integrating circuit actuated with the resistance value of said resistance means determined alternatively by one of said two groups of terminals, wherein a first insulating base carries said resistance means and a first of said group of terminals; a second insulating base carries a second of said groups of terminals; mutually insulated conductors connect said first group of terminals to respective spaced points along said resistance means; and conductor means connect said first group of terminals to corresponding terminals of said second group respectively.

3,893,141
SINGLE LENS REFLEX CAMERA MIRROR AND DIAPHRAGM ADJUSTING MECHANISM

Naoyuki Uno, and Namura Katsuhiko, both of Kawagoe, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 12, 1973, Ser. No. 396,657
Claims priority, application Japan, Sept. 21, 1972, 47-108967
Int. Cl.[2] G03B 19/12, 9/02
U.S. Cl. 354—156 **3 Claims**

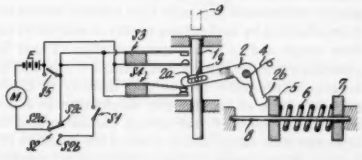
1. In a single lens reflex camera including a mirror moveable between an advanced viewing position and a retracted photographing position and a diaphragm moveable between a retracted aperture open condition and an advanced reduced aperture condition, a cam member manually rotatable from an intermediate position in opposite directions to opposite first and second positions and having a first section including successive raised and depressed portion and a second section including an intermediate depressed portion and raised portions on opposite sides of said depressed portion, first means including a first arm operatively engageable with said mirror and swingable between mirror advanced and retracted positions and a lever having a first end operatively engageable with said first arm and a second end defining a first follower engaging with said cam member first section for advancing and retracting said mirror in response to said follower engaging alternate of said cam member first section depressed and raised portions, and second means including a second arm swingable between a diaphragm open aperture and reduced aperture positions and a second lever having a first end operatively engageable with said second arm and a second end defining a second follower engaging said cam member second section for positioning said diaphragm in its retracted and advanced aperture positions in response to said second follower alternatively engaging said cam member second section depressed and raised portions.



3,893,142
ELECTRIC MOTOR DRIVEN AUTOMATIC FILM ADVANCE

Akihiro Arai, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 17, 1973, Ser. No. 380,049
Claims priority, application Japan, July 28, 1972, 47-88785
Int. Cl. G03b 19/04
U.S. Cl. 354—204 **6 Claims**



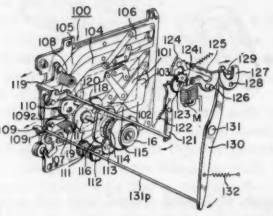
1. An automatic stopping mechanism in a camera of electrical automatic film transport type comprising:
   a. means including a drive motor for advancing a film a unit frame, and charging the camera shutter;
   b. a shutter release actuator member movable between advanced and retracted positions and urged to its advanced position by said drive motor following full film frame advance or completion of a film;
   c. means including a shutter release locking mechanism for stopping said shutter release actuator member at an intermediate position between said retracted and advanced positions;
   d. a current source for said drive motor; and
   e. a control circuit including a switching mechanism mounted in said control circuit including said drive motor and current source at least during the time when the film frame is advanced or the shutter is charged, said switching mechanism by contact with said shutter release actuator member being in a closed position whereby said motor is energized when said shutter release actuator member is either in said advanced or in said retracted position and in an open position when the shutter release actuator member is in an intermediate stop position whereby said motor is deenergized and stops automatically.

3,893,143

DEVICE FOR ADJUSTING A SHUTTER EXPOSURE TIME FOR A CAMERA

Tatsuya Taguchi, Tokyo, and Yukio Iura, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1973, Ser. No. 392,451
Claims priority, application Japan, Sept. 2, 1972, 47-88207
Int. Cl. G03b *9/62*
U.S. Cl. 354—258 **13 Claims**



1. A shutter device for a camera, which comprises:

a shutter mechanism having a shutter opening means and a shutter closing means arranged for operation in exposure time sequence after actuation of a shutter release means; exposure time setting means including a manual setting control and a mechanical displacement transmission system responsive thereto, said setting means being settable for exposure time in substantially contiguous short, medium and long exposure time ranges;

a first mechanical exposure time control means arranged to be settable by said displacement transmission system and arranged to control fully the exposure time of said shutter mechanism in accordance with the position of said setting means when said setting means is set within said short exposure time range;

a second mechanical exposure time control means arranged to be disabled by said setting means in said short exposure time range and to retard the operation of said first mechanical exposure time control means in said medium and long exposure time ranges and thereby to control the exposure time of said shutter mechanism in accordance with the position of said setting means in said medium exposure time range and to control the duration of a final portion of the exposure time of said shutter mechanism in said long exposure time range, said second mechanical exposure time control means including a control member for limiting the speed of movement of said first mechanical exposure control means and a rotary member the rotation of which is mechanically coupled to movement of said control member so as to provide a retarding action on movement of the latter and to reduce the force required to block said movement when said rotary member is blocked; and

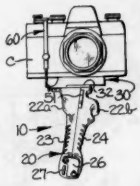
electronic exposure time control means arranged to be settable by said displacement transmission system and arranged to be electrically enabled only for settings of said setting means in said long exposure time range and also arranged to participate additively with said second mechanical exposure time control means to control exposure time of said shutter mechanism in said long exposure time range, said electronic control means including electromagnet means provided with a spring-biased armature structure arranged to blockingly engage said rotary member to block said control member of said second mechanical exposure time control means in its initial position for a time period controlled by said setting means which is less than the exposure time and thereafter to release said rotary member and thereby to release said second mechanical exposure time control means for a full operation thereof.

3,893,144

PISTOL GRIP FOR A CAMERA

Ervin M. Funderburk, 1648 Providence Rd., Charlotte, N.C. 28207

Continuation-in-part of Ser. No. 300,827, Oct. 25, 1972, abandoned. This application Oct. 18, 1973, Ser. No. 407,423
Int. Cl. G03b *17/00*
U.S. Cl. 354—293 **5 Claims**



1. A camera having a shutter mechanism and a downwardly operating shutter release for tripping said shutter mechanism when making an exposure, and in combination therewith a pistol grip adapted for providing steady and positive control over the camera while making an exposure, said pistol grip comprising an elongate handle, a generally planar horizontal mounting surface located adjacent the upper end of the handle and supporting the lower surface of said camera thereon, fastener means associated with said mounting surface and securing said camera to the mounting surface, a trigger located in the upper portion of said handle and adapted for being depressed by the forefinger of the hand gripping the handle, an elongate connector member extending upwardly above said mounting surface, means carried by the upper end of said connector member for attaching the connector member to said shutter release, a linkage mechanism interconnecting the lower end of said elongate connector member and said trigger for imparting downward movement to the connector member when the trigger is depressed, said connector member and linkage mechanism being thereby adapted to operate the shutter release of said camera when said trigger is depressed, said linkage mechanism including means for providing a mechanical advantage to said trigger whereby the trigger may be depressed with less force than the force required to depress the shutter release of the camera for thereby facilitating smoothly tripping the shutter mechanism of the camera while maintaining steady and positive control over the camera, and said linkage mechanism also including means permitting adjusting the amount of mechanical advantage provided in the linkage mechanism for accommodating cameras having varying lengths of throw in the shutter release.

3,893,145

FLASH EXTENDER AND CAMERA SUPPORT

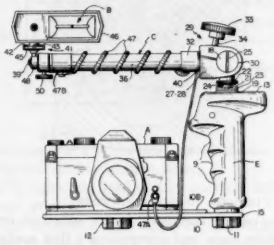
Dwayne L. King, 395 Grove St., No. 1435, Reno, Nev. 89502

Filed Apr. 19, 1974, Ser. No. 462,418
Int. Cl. G03b *17/56*
U.S. Cl. 354—293 **4 Claims**

1. A photographic apparatus including in combination a camera, a support plate releasably coupled to said camera, said support plate having a land portion, said land portion having releasable coupling means thereon, a telescopic extender means having a first end coupled to said land portion at said releasable coupling means and a second end connected to a flash illumination means, the improvement comprising:

trunion joint means connecting said releasable coupling on said land means to said first end of said telescopic extender for providing pivotal movement of said telescopic extender about a first axis and about a second axis perpendicular to said first axis, said trunion joint means including a trunion joint portion having a pair of spaced ears with aligned sockets, a trunion shafted mounted at

opposite ends in said ear sockets, one of said ears providing a split socket for one end of said shaft, said trunion shaft having an opening through a medial portion thereof, and a second shaft mounted in said trunion shaft opening, said second shaft being connected to said land portion of said hand grip by said releasable coupling in said ear with the said split socket having bifurcated portions formed with aligned threaded and unthreaded bore portions on respective sides of the split portion of said ear, a locking bolt with a reduced end in said bore portions, and handle means to rotate said bifurcated portions of said ear together, to thereby frictionally grip one end of said trunion



shaft in said split ear socket and lock said trunion shaft to set angular positions, said trunion shaft being longitudinally bifurcated at an end to provide lateral resiliency for optimum adjustment efficiency in said split socket and wherein said bolt is formed with a threaded reduced end with a shoulder portion, said shoulder mating with a countersunk surface in said unthreaded bore to impart thrust to said surface; and

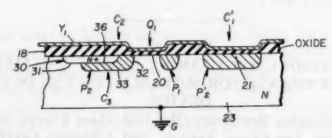
ball joint means coupling said second end of said telescopic extender to said flash illumination means to provide angular movement of said flash illumination means about said second end of said telescopic extender.

3,893,146

SEMICONDUCTOR CAPACITOR STRUCTURE AND MEMORY CELL, AND METHOD OF MAKING

Richard H. Heeren, Palatine, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 26, 1973, Ser. No. 427,874
Int. Cl. H01l *11/00*
U.S. Cl. 357—14 **7 Claims**



1. An improved cell capacitor structure for an MOS integrated circuit memory chip of the type having a cell-gating field-effect transistor including a grounded substrate of type I semiconductor material and first and second controlled terminals consisting of first and second diffusions of type II semiconductor material formed in the upper surface of the substrate, the first controlled terminal being selectively connectable (1) to a source of charging potential for the cell to store charge on the second controlled terminal when the transistor is turned ON, or (2) to ground to discharge any stored charge on the second controlled terminal when the transistor is turned ON, the second diffusion being an isolated island of substantial area unconnected to external circuits so as to form a first electrode of the cell capacitor, the grounded substrate forming the second electrode of the cell capacitor, and the induced depletion region formed at the second diffusion to substrate junction when the second diffusion is charged constituting the capacitor dielectric, the improved cell capacitor structure being characterized in that:

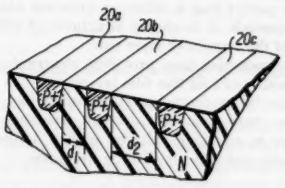
a third diffusion, of type I+ semiconductor material, is formed in the upper surface of the chip overlying the second diffusion area except for the second controlled terminal area of the transistor, the third diffusion being covered by an insulating layer of oxide and being isolated from external circuits, the third diffusion extending beyond the periphery of the second diffusion into electrical contact with the grounded substrate, the interconnected substrate and third diffusion together forming the second electrode on the cell capacitor and the induced depletion region formed at the junction between the second and third diffusions when the second diffusion is charged constituting the major portion of the cell capacitance.

3,893,147

MULTISTATE VARACTOR

David W. Williams, Baltimore, Md., and Phillip L. Peyton, Falls Church, Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sept. 5, 1973, Ser. No. 394,600
Int. Cl. H01l *5/00*
U.S. Cl. 357—14 **9 Claims**



6. A multistate voltage-variable capacitor comprising:

a semiconductor substrate of one conductivity type;

said substrate having diffused therein at least three zones having an opposite conductivity type, successive said zones being spaced apart by different amounts thereby defining corresponding, different interzone spacings, said zones and said substrate forming a plurality of PN junctions; and

means for applying a selectively variable electric potential between each of said zones and said substrate thereby to establish a reverse bias across each of said PN junctions, each said zone developing a depletion layer in said substrate which increases in extent as a function of the magnitude of the reverse bias, and successive said zones being spaced whereby the depletion layer for each zone overlaps the depletion layer for a next adjacent zone at a predetermined voltage, the successive, different interzone spacings defining successive, different predetermined voltages at which the respective depletion layers of said successive, adjacent zones overlap.

3,893,148

LAYERED SUPERLATTIC SWITCHING AND NEGATIVE RESISTANCE DEVICES

A. Hamid Madjid, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

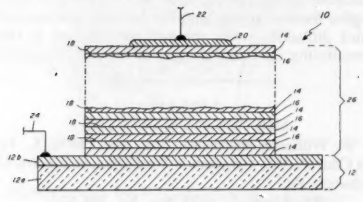
Filed Feb. 25, 1974, Ser. No. 445,374
Int. Cl.[2] H01L *29/161, 29/205, 29/255, 27/12*
U.S. Cl. 357—16 **7 Claims**

1. A solid state, multiple resistance switching device comprising:

substrate means, including a first conductive layer, for supporting thin film layers and for providing electrical connection with a first one of said thin film layers;

a plurality of superimposed thin film layers supported on said substrate means and comprising alternate silicon monoxide and silver thin film layers, adjacent ones of said silicon monixide and of said silver thin film layers forming layer pairs;

said silicon monixide thin film layers each being in the range of 20 A to 90 A in thickness and said silver thin film layers each being in the range of 3 A to 85 A in thickness;



a superlattice structure being disposed between the layers of each of said pairs, each superlattice structure having an identity period that is different from the characteristic identityperiods of boundary structures of either of the layers of the respective layer pair;

a second conductive layer providing electrical connection with another of said thin film layers; and

said device being characterized by an ability to change between more than two discrete resistance values in response to changing voltages applied across said thin film layers and said superlattice structures.

3,893,149

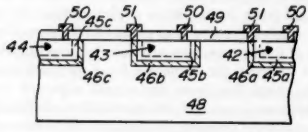
SCANNABLE LIGHT EMITTING DIODE ARRAY AND METHOD

Lawrence A. Grenon, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 188,274, Oct. 12, 1971, abandoned. This application Apr. 15, 1974, Ser. No. 461,089

Int. Cl. G08b *5/36*

U.S. Cl. 357—17 **3 Claims**



1. A monolithic light display comprising a matrix of light emitting diodes in an integral structure which is scannable to produce an alpha numeric character display, an insulating supporting carrier having first and second major planar parallel surfaces, each of the light emitting diodes being electrically isolated from each other diode in a planar surface of an insulating supporting carrier, means on said planar surface of the supporting carrier for electrically connecting the cathodes of the plurality of diodes in a series of rows, a conductive layer surrounding and underlying each diode and means on said planar surface of the supporting carrier contacting said conductive layer for connecting the anodes of said diodes in a plurality of columns.

3,893,150

SEMICONDUCTOR DEVICE HAVING AN ELECTROLUMINESCENT DIODE

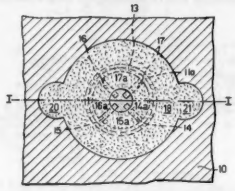
Jean-Claude Dubois, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 246,139, April 21, 1972, abandoned. This application June 12, 1974, Ser. No. 478,610

Claims priority, application France, Apr. 22, 1971, 71.14388

Int. Cl. H01l *15/00*

U.S. Cl. 357—17 **6 Claims**



1. A semiconductor device comprising:

a. a substantially flat semiconductor substrate having a first conductivity type and comprising a first surface;

b. at least one diffused region located at said first surface of said substrate and having a second conductivity type so as to form an electroluminescent junction with said substrate and means for energizing said junction;

c. a dielectric material layer covering at least a portion of said substrate surface and including an opening extending therethrough, said surface portion comprising at least a part of said diffused region surface and said dielectric layer being transparent at those parts thereof disposed at said diffused region surface; and

d. contact elements provided at said diffused region surface, at least a first one of said contact elements comprising a first portion having a ring configuration and extending through said layer opening to said diffused region surface and extending along the periphery of said region, said first contact element consisting essentially of a conductive material, said first contact element further comprising a second portion comprising a layer of material that is opaque to light radiation emitted by said junction and that is disposed at the inside of and along said first portion, said opaque layer being at least partly located on a portion of said dielectric layer disposed above said diffused region and extending toward the central part of said diffused region surface.

3,893,151

SEMICONDUCTOR MEMORY DEVICE AND FIELD EFFECT TRANSISTOR SUITABLE FOR USE IN THE DEVICE

Cornelis Albertus Bosselaar; Olof Erik Hans Klaver, both of Nijmegen; Jan Florus Verwey, and Johannes Gerrit Van Santen, both of Emmasingel, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 7, 1973, Ser. No. 367,957

Claims priority, application Netherlands, June 13, 1972, 7208026

Int. Cl. H01l *11/14*

U.S. Cl. 357—23 **16 Claims**

1. A semiconductor memory device comprising:

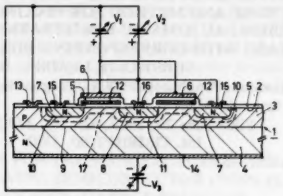
a. a semiconductor body comprising a first region that is adjacent to the surface of said body,

b. an electrically insulating layer that at least partly covers said first region,

c. a gate electrode disposed over said semiconductor body surface and separated therefrom by said insulating layer,

d. means for forming a depletion zone adjacent to said insulating layer in said first region below the gate elec-

trode, whereby charge carriers can be injected from said semiconductor body into said insulating layer and the electrical properties of said device thereby changed, said depletion zone forming means comprising means for providing across said depletion zone a voltage drop that is lower than the voltage at which avalanche multiplication occurs, but higher than the potential barrier for said



charge carriers at the interface between said semiconductor body and said insulating layer,

e. means for injecting said charge carriers into said depletion zone, and

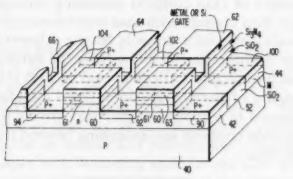
f. means for simultaneously applying a voltage to said gate electrode to exert on said charge carriers a force in the direction of said interface.

3,893,152

METAL NITRIDE OXIDE SEMICONDUCTOR INTEGRATED CIRCUIT STRUCTURE

Hung Chang Lin, 8 Schindler Ct., Silver Spring, Md. 20903

Filed July 25, 1973, Ser. No. 382,355
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 357—23 **10 Claims**



1. An array of MNOS devices having binary logic operating states thereby being adapted to operate as a matrix of discrete storage cells, the improvement comprising:

a body of first type semiconductor material;

a continuous planar epitaxial layer of substantially uniform thickness formed on the surface of said body consisting of a plurality of active regions comprising alternate rows of second type semiconductive material, separated by contiguous inactive regions comprising intervening rows of dielectric isolation material, said rows extending through the entire thickness of the epitaxial layer;

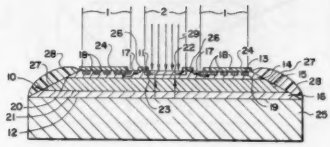
a plurality of separated columns of MNOS gates extending substantially transversely across said rows of second type semiconductive material and said rows of dielectric isolation material, said columns each comprising gate material separated from said rows by respective columns of substantially the same width dimension as said gate material of a first layer of dielectric material contiguous with said rows and a second layer of dielectric material contiguously sandwiched between said first layer of dielectric material and said gate material, each gate portion and the active region subtended thereby comprising a separate storage cell having a capacitive node.

3,893,153

LIGHT ACTIVATED THYRISTOR WITH HIGH DI/DT CAPABILITY

Derrick J. Page, and John S. Roberts, both of Export, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 10, 1974, Ser. No. 432,374
Int. Cl. H01l *9/12*
U.S. Cl. 357—38 **3 Claims**



1. A light activated thyristor with high dI/dt capability comprising:

A. first and second thyristors disposed in a semiconductor body having first and second major surfaces; each thyristor having four impurity regions extending through the body between the major surfaces; said impurity regions of alternate carrier-type disposed alternately with the PN junctions formed between adjacent regions; the two regions interior being cathode-base and anode-base regions, and the two regions adjoining the first and second major surfaces and adjoining the cathode-base and anode-base regions,respectively, being cathode-emitter and anode-emitter regions, respectively;

B. the cathode-base, anode-base and anode-emitter regions of the first and second thyristors being common to both thyristors;

C. said common cathode base region adjoining the first major surface intermittently of the cathode-emitter region of the first thyristor to form shunts, and between the cathode-emitter regions of the first and second thyristor such that the cathode-emitter regions are spaced apart;

D. portions of the first surface adjoining the cathode-emitter region of the second thyristor adapted for activation of the second thyristor therethrough by electromagnetic radiation of wavelengths corresponding substantially to the bandgap energy of the semiconductor material of the body;

E. cathode and anode electrodes disposed on first and second major surfaces, respectively, of the semiconductor body and making ohmically contact with the cathode-emitter region of the first thyristor and the common anode-emitter region of both thyristors, respectively, said cathode electrode also making ohmic contact with the cathode-base region at the shunts through the cathode-emitter region of the first thyristor; and

F. a floating contact positioned on the first major surface to make ohmic contact with the common cathode-base region between the thyristors and the cathode-emitter region of the second thyristor, while leaving exposed for light activation therethrough substantial portions of the first major surface adjoining the cathode-emitter region of the second thyristor.

3,893,154
SEMICONDUCTOR ARRANGEMENT WITH CURRENT STABILIZING RESISTANCE

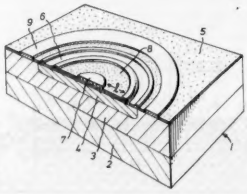
Werner Mroczek, Heilbronn, and Josef Wolf, Leingarten, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt/Main, Germany

Filed Oct. 19, 1973, Ser. No. 407,817

Claims priority, application Germany, Oct. 21, 1972, 2251727

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—35 **7 Claims**



1. In a semiconductor device including a semiconductor body having at least two regions of alternatingly opposite conductivity type with at least one of said regions forming a pn junction which extends to a major surface of said semiconductor body, an insulating layer on said major surface, and a contact ohmically connected to said one region via an aperture in said insulating layer, the improvement wherein said contact is formed of resistance material, is connected to said one region only at its outer edge and extends along the entire length of said edge of said one region; and further comprising a current feed terminal for said one region connected to said contact by a resistance formed of a coherent layer of resistance material on said insulating layer, said current feed terminal being connected to said layer of resistance material at a position such that the shortest spacing between said current feed terminal and said contact via said layer of resistance material is the same at all points.

3,893,155
COMPLEMENTARY MIS INTEGRATED CIRCUIT DEVICE ON INSULATING SUBSTRATE

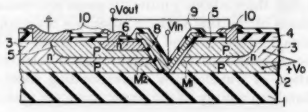
Katsumi Ogiue, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed June 17, 1974, Ser. No. 480,293

Claims priority, application Japan, Oct. 12, 1973, 48-113886

Int. Cl. H01l *11/14*

U.S. Cl. 357—42 **25 Claims**



10. A semiconductor device comprising:

a substrate of insulating material;

a first plurality of semiconductor layers disposed one on top of another on a first portion of said insulating substrate, at least three adjacent ones of which have respectively different conductivity types;

a second plurality of semiconductor layers disposed one on top of another on a second portion of said insulating substrate, and at least three adjacent ones of which have respectively different conductivity types, said second plurality of layers being spaced apart from said first plurality of layers and having side surfaces thereof facing side surfaces of said first plurality of layers;

first and second insulating films disposed on the respective side surfaces of said first and second pluralities of semiconductor layers; and

a common electrode layer disposed on said first and second insulating films.

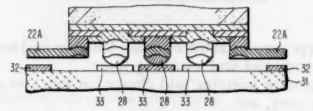
3,893,156
NOVEL BEAM LEAD INTEGRATED CIRCUIT STRUCTURE AND METHOD FOR MAKING THE SAME INCLUDING AUTOMATIC REGISTRATION OF BEAM LEADS WITH CORRESPONDING DIELECTRIC SUBSTRATE LEADS

Jacob Riseman, Poughkeepsie, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed June 29, 1973, Ser. No. 375,296

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—67 **16 Claims**



1. A beam-lead integrated circuit chip structure comprising:

a semiconductor chip substrate having a surface from which the active and passive devices in the circuit extend into the substrate,

a first layer of electrically insulative material over said surface,

a metallic interconnector pattern formed on said layer in a first plane, said pattern being selectively connected to said devices by device contacts extending through said layer,

a second layer of electrically insulative material over said interconnector pattern,

a plurality of chip contacts extending through said second layer into contact with said interconnector pattern,

a plurality of solder mounds having a lower melting point than beam-leads extending from the surface of said chip structure to a level beyond said second plane, and

a plurality of peripheral cantilevered metallic beam-leads, disposed in a second plane, respectively in contact with said chip contacts and extending beyond the periphery of said chip.

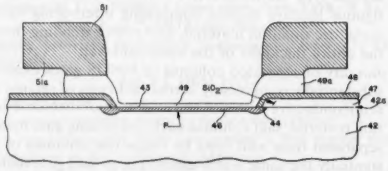
3,893,157
SEMICONDUCTOR TARGET WITH INTEGRAL BEAM SHIELD

Aris Silzars, Redwood City, and Aaron Ballonoff, Sunnyvale, both of Calif., assignors to Signetics Corporation, Sunnyvale and Watkins-Johnson Company, Palo Alto, both of, Calif.

Filed June 4, 1973, Ser. No. 366,534

Int. Cl. H01l *5/00*

U.S. Cl. 357—69 **13 Claims**



1. In a semiconductor device of the type including an evacuated envelope and a gun positioned at one end of the envelope to project radiation along the envelope, a semiconductor target spaced from the gun to receive the radiation and comprising a semiconductor substrate having a front surface ori-

ented towards the radiation, at least one diode formed in said semiconductor substrate and extending to said front surface, a passivating layer formed on said front surface covering all but the inner portion of said diode and being of a thickness to inhibit penetration of radiation, a beam shield of radiation-absorbing material, mounting means carried by said semiconductor substrate front surface for mounting said beam shield at the periphery of said semiconductor substrate surrounding the diode and in spaced relationship to said passivating layer, said beam shield extending out over the periphery of said semiconductor substrate adjacent said at least one diode for shielding said periphery from the radiation, said beam shield having a central opening aligned with an inner portion of said diode for permitting said radiation to strike said inner portion.

3,893,158

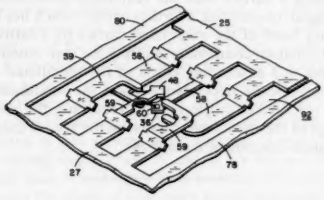
LEAD FRAME FOR THE MANUFACTURE OF ELECTRIC DEVICES HAVING SEMICONDUCTOR CHIPS PLACED IN A FACE TO FACE RELATION

Milan L. Lincoln, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 234,955, March 15, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,180

Int. Cl. H01 *5/02*

U.S. Cl. 357—70 **8 Claims**



1. A one-piece metal lead frame for use in the multi-step fabrication of a plurality of electrical devices having two integral parts extending longitudinally of the length of said lead frame, with one part being severable from the other part of the lead frame in one step of said fabrication and adapted to be assembled in an interlocked relationship in another step of said fabrication with mounting pads in one part in a face-to-face relationship with mounting pads of the other part,

said lead frame having a plurality of segments corresponding to the plurality of electrical devices to be fabricated positioned side by side over the longitudinal length of the lead frame and each extending transversely of said longitudinal length,

each segment having two lead frame sections with one section being in one of said parts and the other section being in the other of said parts, and each said section having a mounting pad therein,

metal portions in said lead frame extending transversely of said longitudinal length with two metal portions defining the longitudinal width of a segment,

each said metal portion having therein a preformed locking aperture and a free-end locking projection of the same configuration as said aperture, with said aperture and said projections being separated upon severance of said one part from the other part of said lead frame,

and with one said projection adapted to fit in one aperture upon the assembly of said two severed parts and maintained therein in a frictional fit and in a single plane to interlock said two parts together, with pairs of mounting pads in a face-to-face relationship in said interlocked position and with each mounting pad in a pair in a plane displaced from the plane of said other mounting pad of said pair.

3,893,159

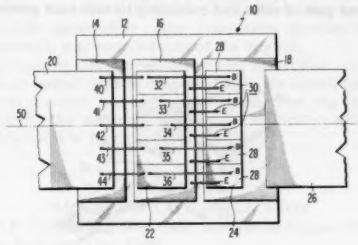
MULTIPLE CELL HIGH FREQUENCY POWER SEMICONDUCTOR DEVICE HAVING BOND WIRES OF DIFFERING INDUCTANCE FROM CELL TO CELL

Irving Edwin Martin, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 26, 1974, Ser. No. 445,971

Int. Cl. H01 *3/00, 5/00*

U.S. Cl. 357—70 **3 Claims**



1. A semiconductor device including a plurality of transistor cells, each of said cells comprising at least two regions of opposite type conductivity,

a plurality of lead wires individually connected to the same corresponding region of different ones of said cells,

said wires being disposed in a generally side by side array having a central axis,

the self-inductance of said wires being greater with increasing distance from said axis.

3,893,160

RESISTIVE CONNECTING CONTACT FOR A SILICON SEMICONDUCTOR COMPONENT

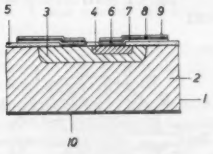
Leonhard Botzenhardt, Heilbronn, Germany, assignor to Licentia-Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Aug. 28, 1973, Ser. No. 392,174

Claims priority, application Germany, Sept. 8, 1972, 2244062

Int. Cl. H01 *3/00, 5/00*

U.S. Cl. 357—71 **5 Claims**



1. A resistive connecting contact for a silicon semiconductor component, characterized in that the contact, starting from the silicon semiconductor body, comprises the layer sequence platinum silicide-titanium-molybdenum-gold.

3,893,161

FRICTIONALLY ENGAGEABLE HEAT SINK FOR SOLID STATE DEVICES

Albert Pesak, Jr., c/o Fab-Tek, Inc., 17 Sugar Hollow Rd., Danbury, Conn. 06810

Filed Feb. 4, 1974, Ser. No. 439,371

Int. Cl. H01 *3/00, 5/00*

U.S. Cl. 357—81 **5 Claims**

1. A heat sink adapted to frictionally engage a solid state device of the type having a metallic tab extending therefrom

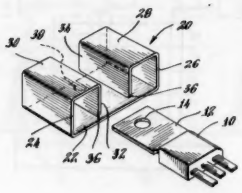
which is inserted therein for the removal and dissipation of heat generated by such a device, comprising

a. a stamped sheet metal body of high thermal conductivity material having a base member,

b. a first pair of oppositely facing sides bent in from opposite ends of said base member,

c. a second pair of sides bent in and extending toward each other from said first pair of oppositely facing sides and spaced from said base member, and

d. a pair of opposed resilient fingers bent in from said second pair of sides and extending to said base member,



e. said first and second pairs of sides and said pair of opposed resilient fingers forming open ended enclosures on each end of said base member,

f. said base member and said resilient fingers adapted to receive and frictionally engage the metallic tab of a solid state device inserted therein, said heat sink being positioned vertically on the metallic tab of the solid state device with said open ended enclosures vertically aligned with the solid state device on which said heat sink is mounted, thereby accommodating the air flow through the hollow enclosures of the heat sink and facilitating the cooling of the solid state device.

3,893,162

RESILIENT TUBULAR MEMBER FOR HOLDING A SEMICONDUCTOR DEVICE TOGETHER UNDER PRESSURE

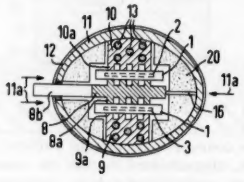
Erwin Weidemann, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 334,931, Feb. 22, 1973, abandoned. This application May 30, 1974, Ser. No. 474,801

Claims priority, application Germany, Mar. 2, 1972, 2209993

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—82 **10 Claims**



1. An arrangement for holding the parts of a semiconductor package together under pressure and for directing a coolant over the package, the arrangement comprising: a cooling channel for receiving the semiconductor package therein and for directing a flow of the coolant thereover; the semiconductor package including at least one semiconductor component having a disc-like configuration, and contact members disposed on both sides of said component respectively; said cooling channel being made of resilient material and being in a tensioned condition so as to cause the same to apply a spring-like force directly to said package, said component and said contact members being disposed with respect to said force to conjointly coact with said channel to cause said force to hold said package together under pressure.

3,893,163

METHOD OF RECORDING A VIDEO SIGNAL

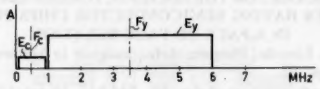
Johannes Hendrik Wessels, and Willem van den Bussche, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,863

Claims priority, application Netherlands, Sept. 2, 1972, 7212003

Int. Cl. H04n *5/76, 9/02*

U.S. Cl. 358—4 **20 Claims**



1. Method of recording a video signal, in particular a color video signal, on a record carrier, which comprises frequency modulating a carrier with the luminance information of the video signal, modulating a further carrier which lies below the frequency band of the modulated carrier by a further associated information component, shifting the zero crossings of the ascending and descending edges of the modulated carrier in mutually opposite dependence upon the modulated further carrier (or further carriers), and recording the shifted zero crossings of the modulated carrier on the record carrier as the information-containing quantities.

3,893,164

SYSTEM FOR COMB-FILTERING TELEVISION SIGNALS

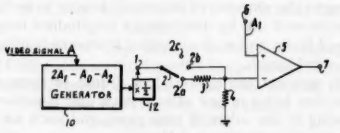
Helmut Raedecke, Darmstadt, Germany, assignor to Robert Bosch Fernsehanlagen GmbH, Darmstadt, Germany

Filed Nov. 1, 1973, Ser. No. 411,714

Claims priority, application Germany, Nov. 10, 1972, 2254941

Int. Cl. H04n *9/535*

U.S. Cl. 358—31 **4 Claims**



1. System for comb-filtering tv signals, comprising:

A. means for generating a television signal mixture $k(2A_1 - A_0 - A_2)$, wherein A_2, A_1, and A_0 represent three time-sequential lines of an input television signal,

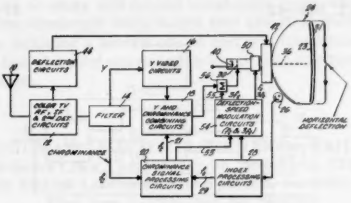
B. means for subtracting the signal mixture from a television signal A_1 which is the input television signal delayed by the duration of one line, wherein the television signal A_0 is not delayed, the television A_1 is delayed by the duration of one line, and the television signal A_2 is delayed by the duration of two lines, and

C. means for switchng the attenuation k between $k = ½$ for color television systems with a quarter-line offset and $k = ¼$ for systems with a half-line offset.

3,893,165
ELECTRICALLY-CONTROLLED IMAGE-DISPLAY SYSTEM AND METHOD, AND APPARATUS SUITABLE FOR USE THEREIN

David E. Sunstein, 9 Warton Rd., Nashua, N.H. 03060

Filed Mar. 13, 1973, Ser. No. 340,669
Int. Cl. H04n 9/24
U.S. Cl. 358—67 30 Claims



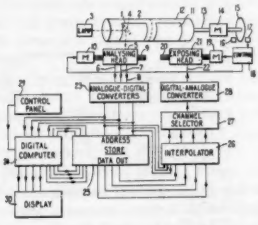
1. In an electrically-controlled image-display system comprising image-forming means including a plurality of similar groups of elements of different light-controlling characteristics, means for scanning said groups with a scanning entity to activate said elements in a manner to form an image, and index elements positioned to be scanned by said scanning entity during formation of said image to produce index signals representative of the position of said scanning entity:

means for producing variations in the speed of said scanning within at least one of said groups; said index elements being positioned so as to be scanned by said scanning entity at a frequency which is M/N times the frequency of scanning of said groups in the absence of said variations in scanning speed where N and M are integers and M is greater than N and other than an integral multiple of N, whereby the phase of said index signals averaged over the time of said scanning of several of said groups is not substantially adversely affected by said scanning-speed variations.

3,893,166
COLOUR CORRECTING IMAGE REPRODUCING METHODS AND APPARATUS

Peter C. Pugsley, Pinner, England, assignor to Crosfield Electronics Limited, London, England

Continuation-in-part of Ser. No. 321,118, Jan. 5, 1973, abandoned. This application May 9, 1974, Ser. No. 468,385
Claims priority, application United Kingdom, Jan. 5, 1972, 478/72
Int. Cl. G03f 3/08
U.S. Cl. 358—80 7 Claims



1. A method of reproducing a coloured original, including:

programming a digital computer to effect tone and colour correction of colour-component signals applied thereto and to provide tone and colour corrected output signals;

adjusting parameter-setting means to define parameters used by said digital computer in correcting said colour-component signals;

supplying said computer with a matrix of input signal combinations, each input signal representing a colour component and each combination representing a point in colour space, and transferring corresponding output signals from the computer to a store, whereby said store contains a matrix of tone and colour corrected signals corresponding to said input points in colour space;

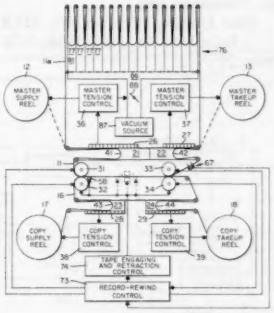
scanning the original with a photo-electric scanner to obtain signals representing colour component densities of successively scanned elements of the original;

interrogating said store to derive tone and colour corrected store output signals corresponding to the signals from the said scanner; and using said signals from the store to control the treatment of an output surface on which the original is to be reproduced.

3,893,167
MAGNETIC TAPE DUPLICATOR

Alfred F. Stahler, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 1, 1970, Ser. No. 24,761
Int. Cl. G11b 5/86
U.S. Cl. 360—16 17 Claims



1. Apparatus for magnetically duplicating a magnetic copy tape from a magnetic master tape, comprising:

means including a first pair of pinch rollers for bringing the magnetic sides of said master and said copy tape into superimposed adhesion contact;

means for urging said pinch rollers toward one another with sufficient pressure to squeeze out the air from between the magnetic sides of said tapes;

means for applying transfer excitation to said superimposed master and copy tape; and means for guiding said superimposed master and copy tapes in a path of unchanging curvature from said pinch rollers through and beyond said transfer excitation means so as to avoid relative longitudinal shifting of said magnetic sides of said tape during the imprinting thereof.

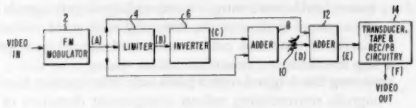
3,893,168
TECHNIQUE FOR MINIMIZING INTERFERENCE IN VIDEO RECORDER REPRODUCER SYSTEMS

Fred Lorin Bechly, Cherry Hill, and Jing Jue Young, Delran, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 7, 1974, Ser. No. 448,922
Int. Cl. G11b 5/02
U.S. Cl. 360—25 8 Claims

1. A system for minimal distortion transducing of an angle modulated signal with a magnetic record medium, said signal including a carrier component and sideband components, produced in accordance with a modulating signal, comprising:

limiter means responsive to said angle modulated signal for providing an output with a further component whose frequency is related to the frequency of said carrier component and said modulating signal, inverting means coupled to the



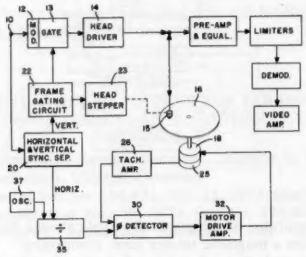
output of said limiting means, signal combining means responsive to the output of said inverting means and said angle modulated signal to provide a further output signal, and means coupled to said further output for recording said further signal on said magnetic record medium.

3,893,169

VIDEO RECORDER WHICH ACCEPTS A PLURALITY OF HORIZONTAL LINE RATES

Robert P. Hall, Jr., Auburn, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Jan. 29, 1973, Ser. No. 327,833
Int. Cl. G11b *15/46;* **H04n** *5/78*
U.S. Cl. 360—37 **4 Claims**



1. In a single frame video recorder having transducer means for recording and playback of video signals having different horizontal sync frequencies which are related as different multiples of a base frequency, a magnetic recording media, means including a drive motor and controller for moving said media past said transducer means at a predetermined speed, an input terminal for video signals to be recorded,

a gating circuit connected to control the application of signals from said input terminal to said transducer means, a tachometer driven by said motor and providing an output signal at a predetermined base frequency,

a sync separator circuit connected to said input terminal and operative to separate horizontal synchronizing information from the input signal, and

a phase detector receiving said output signal from said tachometer and providing corrective drive signals to said motor controller;

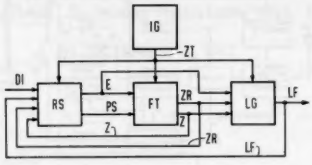
the improvement comprising a divider circuit having a horizontal sync input from said sync separator circuit and an output which is an integral submultiple of said horizontal sync and is equal to said base frequency, said output being connected to said phase detector.

3,893,170

DIGITAL PHASE CONTROL CIRCUIT

Josef Kellner, and Hans Kowalczyk, both of Germering, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 3, 1974, Ser. No. 502,510
Claims priority, application Germany, Sept. 18, 1973, 2346934
Int. Cl. G11b *5/09*
U.S. Cl. 360—42 **21 Claims**



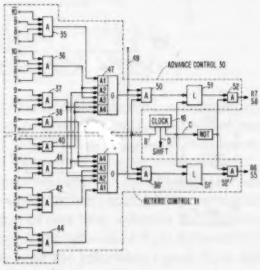
1. In a digital phase control circuit for the production of a rectangular wave oscillation in which synchronization of the rectangular wave oscillation is effected with the aid of data pulses, in which a counter is operative to count pulses of a counter pulse train, counting from a constant initial value to an adjustable final value, with such final value determining the frequency of the rectangular wave oscillation and the final value being adjusted on the arrival of a data pulse, in dependence upon the contents of the counter, the combination of such counter being in the form of an up-down counter which counts pulses upwardly until a final value is reached and then downwardly to the original initial value, a control circuit operatively connected to said counter, having means for increasing the final value or reducing the same, following the arrival of a data pulse, by a fraction of the final value, while the counter correspondingly counts upwardly or downwardly and if the content of the counter is not greater than half the final value, and a bistable trigger stage, at the output of which the rectangular wave oscillation is derived, operatively connected for seting or resetting when the counting content of the counter is correspondingly smaller or greater than half the final value.

3,893,171

SIGNAL ADJUSTMENT CIRCUIT

John W. Marshall; Earl G. McDonal, Jr., both of Boulder, and Phillip B. Roath, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,500
Int. Cl. G11b *5/09*
U.S. Cl. 360—45 **7 Claims**



1. A transition adjustment method, including the following steps in combination:

detecting an incoming signal and generating a string of timed 1 and 0 indicating digital signals having a series of transitions and representative of said incoming signal zero crossovers;

analyzing first, second, and third successive wavelengths separated by a given two signal transitions;

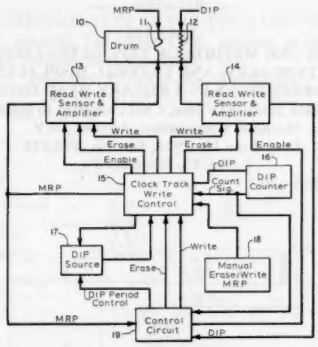
determining which of said first and third wavelengths are longer; and

either adjusting a first one of said two signal transitions in time to make said second wavelength longer when said first wavelength being longer than said third wavelength or adjusting a second one of said two signal transitions when said third wavelength is longer than said first wavelength.

3,893,172
AUTOMATIC MASTER CLOCK TRACK WRITER

John Edward Celek, Carol Stream, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 9, 1974, Ser. No. 504,586
Int. Cl. G11b 5/09
U.S. Cl. 360—51 12 Claims



1. In a drum memory system of the type which includes a revolving magnetic drum, a writing means including an index pulse source for providing the drum with index pulses until receipt of a count signal to afford ready access to data stored on the drum and a master reset pulse source for providing the drum with a reset pulse upon the completion of each drum revolution, reading means comprising an index pulse sensor for reading the index pulses on the drum and a reset pulse sensor for reading the reset pulses on the drum, an index pulse counter for counting the number of index pulses written onto and read from the drum and for providing the count signal when a predetermined number of index pulses have been counted, and an erasing means for erasing the index and reset pulses from the drum, the improvement of a control circuit for insuring that said predetermined number of index pulses are stored on the drum in a closed loop for a single drum revolution comprising:

a first pulse coincidence sensing means coupled to said index pulse sensor and to said master reset pulse sensor for sensing the coincidence of an index pulse and a reset pulse and for providing a first control signal in response to such coincidence;

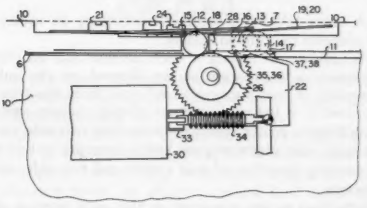
a second pulse coincidence sensing means coupled to said first pulse coincidence sensing means and to said counter for providing a second control signal responsive to the coincidence of said first control signal and said count signal; and

a latching means coupled to said second pulse coincidence sensing means for inhibiting said erasing and writing means and for providing an indication in response to said second control signal; whereby when a master reset pulse and an index pulse are coincident said first pulse coincidence sensing means provides said first control signal and when said first control signal is coincident with said count signal said second pulse coincidence sensing means provides said second control signal to cause said latching means to inhibit further erasing and writing and to provide an indication that the drum has recorded thereon for one drum revolution said predetermined number of index pulses in a closed loop.

3,893,173
MINIATURIZED MAGNETIC CARD READER/RECORDER FOR USE IN HAND-HELD CALCULATOR

Robert B. Taggart, Mountain View; Richard H. Barth, San Jose, and John S. Bailey, Sunnyvale, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 11, 1974, Ser. No. 432,710
Int. Cl.[2] G11B 19/04; G06K 7/08
U.S. Cl. 360—60 7 Claims



1. An electromechanical apparatus for operation with a record card having major surfaces separated by a selected thickness dimension which is very much smaller than the width or length dimension thereof, said apparatus comprising:

chassis means including a guide path for receiving and guiding the record card along a selected path;

drive means disposed at a location along the guide path for moving the record card by frictional engagement therewith along the guide path in response to an electrical signal applied thereto;

electrical means including a resilient elongated first switch member disposed to be deflected to connect to an electrical connection point for applying an electrical signal to said drive means;

first switch member deflecting means positioned at a selected location in the guide path and coupled to the first switch member for deflecting the first switch member as a function of the thickness of the record card to contact said electrical connection point and for simultaneously urging a major surface of the record card into frictional engagement with the drive means;

transducer means disposed at a location along the guide path having a contoured surface for operative engagement with a major surface of the record card; and

contour means disposed at a location along the guide path substantially opposite the contoured surface of the transducer means for deforming a major surface of the record card to conform to the contoured surface of said transducer means.

3,893,174

COLOUR TELEVISION RECEIVER

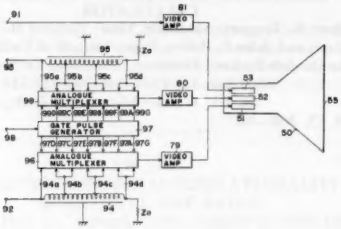
Shunichi Sano, Zama; Koichi Kasahara, Yokohama, both of Japan; Harry C. Murphy, Jr., Apollo, and Harry C. Stauffer, Cheswick, both of Pa., assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed June 28, 1973, Ser. No. 374,311

Claims priority, application Japan, July 1, 1972, 47-65417; Aug. 29, 1972, 47-85894; Sept. 11, 1972, 47-90448; Sept. 11, 1972, 47-90449; Oct. 25, 1972, 47-106219; Oct. 30, 1972, 47-107918; Dec. 21, 1972, 47-127717

Int. Cl. H04n *9/20;* **C10G** *23/02*

U.S. Cl. 358—65 **15 Claims**



1. A color television receiver comprising an in-line type color cathode ray tube including:

a vacuum vessel having a neck portion and an enlarged portion, a fluorescent screen formed on the enlarged portion of said vacuum vessel and three electron guns provided in the neck portion of said vacuum vessel for emitting a center electron beam and two side electron beams, said electron guns being arranged in-line in the scanning direction of said center and two side electron beams;

a deflection means mounted on the neck portion of said vacuum vessel for scanning said electron beams on said fluorescent screen;

means for generating red, green and blue video signals for modulating said center and two side electron beams; and signal processing means including first means for subjecting a video signal for modulating the center beam to a fixed delay, and second means coupled to said generating means for electrically processing two video signals which are coupled to modulate said side electron beams, said second means varying a time dependent electrical characteristic of said two video signals by different amounts during a horizontal scanning period, said characteristic being varied symmetrically with respect to both the preceding and succeeding scanning time relative to a center point of said horizontal scanning period.

3,893,175

RECORDER FOR MONITORING COPIERS

Abby R. Solomon, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 26, 1973, Ser. No. 344,781

Int. Cl. G01d *9/06;* **G11b** *13/00*

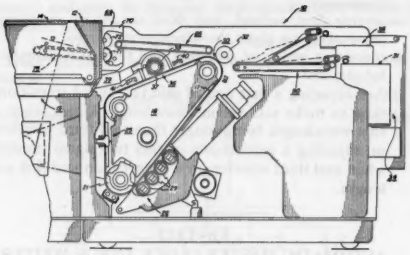
U.S. Cl. 360—6 **11 Claims**

1. Recording apparatus for use in collecting information about customer copier usage patterns and copier failure and operational patterns for subsequent analysis, comprising:

an on-line recorder including a magnetic tape and a recording head for recording real time operating characteristics of the copier on said tape;

means to monitor certain of said copier operating characteristics in real time sequence, the monitor means providing recordable data identifying the copier operating characteristics being monitored as they occur;

data storage means for storing said data pending recording thereof; and



control means adapted on the occurrence of a predetermined recording event in said copier to release at least a block-like portion of the data stored in said data storage means to said recorder head for recording thereof on said tape.

3,893,176

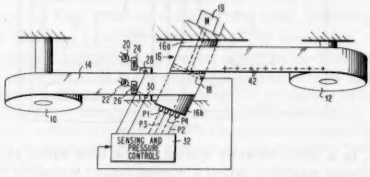
MEANS AND METHOD OF TAPE GUIDE CONTROL WITH TAPE SKEW AND LATERAL DISPLACEMENT CORRECTIONS IN A ROTARY HEAD DRUM

David Wilkes Jones, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 12, 1974, Ser. No. 478,571

Int. Cl. H04n *5/78*

U.S. Cl. 360—70 **7 Claims**



7. A method of correcting the position and alignment of a tape that is transported relative to a magnetic head comprising the steps of:

sensing the edges of the moving tape and generating an error signal representative of the angle of skew of said tape relative to said head;

providing a differential air pressure to different sections of said tape to correct for said skew error;

sensing prerecorded servo signals associated with recorded data tracks and developing a track following error signal representative of the displacement of the tape relative to the position of the magnetic head; and

providing a second differential air pressure across one section of the tape adjacent to said head to correct for lateral displacement of said tape.

3,893,177

AUTOMATIC PROGRAM FINDER SYSTEM FOR TAPE DECKS

Takashi Takenaka, Kamo-gun, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sept. 5, 1973, Ser. No. 394,532

Int. Cl. G11b *27/22, 15/18, 15/02*

U.S. Cl. 360—72 **5 Claims**

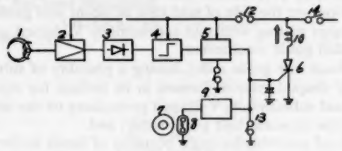
1. In a system for shifting operational states of a recorder apparatus and precisely positioning heads of record areas on a magnetic tape in accordance with determinations of the

presence and the absence of the signals of programs reproduced from the tape, the improvement comprising:

a first capacitor;

first means responsive to the presence of the reproduced signals to charge said first capacitor;

second means responsive to the absence of the reproduced signals to discharge said first capacitor; and



third means for utilizing the discharge current of said first capacitor for generating trigger signals useful for shifting the operational states of the recorder apparatus, whereby the operational states are shifted only if the reproduced signals are first present and then absent.

3,893,178

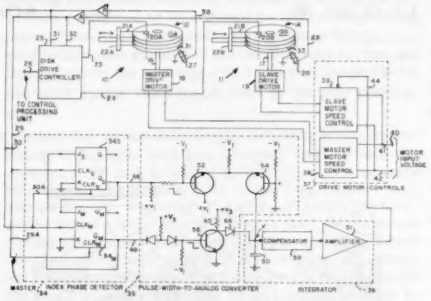
SYNCHRONIZATION OF MULTIPLE DISC DRIVES

Frank J. Sordello, Los Gatos, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.

Filed Dec. 19, 1973, Ser. No. 421,211

Int. Cl.² G11B *5/012, 15/52, 5/82*

U.S. Cl. 360—73 **3 Claims**



1. A disc drive subsystem having a plurality of rotating discs each having an index point utilized to assist in the location of specific locations radially about the discs, including:

adjustable drive means for rotating the discs at desired rotational speeds;

means to signal the arrival of each index point at a predetermined location on the drive, and

circuit means to detect the relative position of the index points and regulate the speeds of the drive means to adjust the speed of rotation of the discs thereby to cause the index points to arrive at the respective predetermined locations concurrently.

3,893,179

TAPE FEED CONTROL APPARATUS

Moriaki Toyoda, Yokohama, Japan, assignor to Denki Onkyo Company, Ltd., Tokyo, Japan

Filed May 1, 1974, Ser. No. 466,090

Claims priority, application Japan, May 1, 1973, 48-47603; May 11, 1973, 48-52750

Int. Cl. G11b *15/18, 27/14, 27/20*

U.S. Cl. 360—74 **12 Claims**

1. A tape feed control apparatus comprising

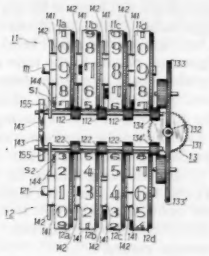
a. a first rotating means which rotates in accordance with feeding of a tape in a direction which is changed over to an opposite direction when said tape is changed over from forward feed to reverse feed and from reverse feed to forward feed,

b. a second rotating means which rotates in accordance with feeding of a tape in a direction which is changed over to an opposite direction when said tape is changed over from forward feed to reverse feed and from reverse feed to forward feed,

c. a first resetting means which resets said first rotating means to a specified position independently from said second rotating means,

d. a second resetting means which resets said second rotating means to a specified position independently os said first rotating means,

e. a first signal generating means which generates a first change-over signal when said first rotating means rotates exceeding the resetting position,



f. a second signal generating means which generates a second change-over signal when said second rotating means rotates exceeding the resetting position,

g. a tape feed direction control circuit which sets alternatively an operation mode for which a forward feed signal to perform forward feed of the tape is generated and an operation mode for which a reverse feed signal to perform reverse feed of the tape is generated, and

h. a coupling means which transmits said first change-over signal to said tape feed direction control circuit so that the tape feed direction control circuit comes in the forward feed mode when said first signal generating means generates the first change-over signal and transmits said second change-over signal to said tape feed direction control means so that the tape feed direction control circuit comes in the reverse feed mode when said second signal generating means generates the second change-over signal.

3,893,180

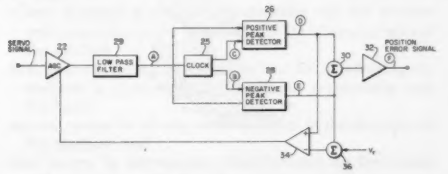
TRANSDUCER POSITIONING SYSTEM

William A. Braun, Acton, Mass., and David S. Dunn, Windham, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1974, Ser. No. 430,343

Int. Cl. G11b *5/58, 17/00, 21/10*

U.S. Cl. 360—77 **14 Claims**



1. In a magnetic storage device wherein a transducer is positioned over a magnetic media by sensing position information, the sensed position information consisting of a train of

pulses having two basic pulse configurations the first pulse configuration consisting of a first pulse of a first polarity followed by a second pulse of a second polarity and the second pulse configuration consisting of a first pulse of the second polarity followed by a second pulse of the first polarity, a system for detecting certain peak amplitudes within the train of pulses comprising:

means for detecting the positive peak amplitude of a pulse having a positive signal polarity in each first pulse configuration, said positive peak amplitude detection means generating a signal indicative of the positive peak amplitude detection;

means for detecting the negative peak amplitude of a pulse having a negative signal polarity in each second pulse configuration, said negative peak amplitude detection means generating a signal indicative of the negative peak amplitude detection;

means for generating a clock signal having a first signal level when the first pulse configuration occurs in the train of pulses and having a second signal level when the second pulse configuration occurs in the train of pulses;

wherein said positive peak amplitude detection means comprises means, responsive to said clocking means, for initiating the detection of a pulse having a positive signal polarity in each first pulse configuration; and said negative peak amplitude detection means comprises means, responsive to said clocking means, for initiating the detection of a pulse having a negative signal polarity in each second pulse configuration, wherein each of said peak amplitude detection means comprises:

a capacitive storage means,

means, responsive to said initiating means, for charging said capacitive storage means,

means for discharging said capacitive storage means at a defined rate, said discharging means being operative to decrease the stored signal level of said capacitive storage means when said capacitive storage means is not being charged by said charging means,

means for feeding back the signal level of said capacitive storage means, and

means for comparing the signal level of the incoming train of pulses with the feedback signal, said comparing means being operative to provide a signal to said initiating means when the signal level of the incoming train of pulses exceeds the feedback signal; and

means for summing the signals indicative of the positive peak amplitude detection and the negative peak amplitude detection, said summing means producing a signal indicative of the relative signal strengths of the detected peak amplitudes in each basic pulse configuration.

3,893,181

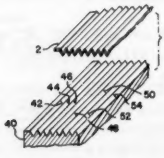
THIN BASE SELF-TRACKING RECORDING TAPE

Robert I. Desourdis, 15420 S.W. 84th Ct., Miami, Fla. 33157

Filed Feb. 14, 1973, Ser. No. 332,288

Int. Cl. G11b *5/62*

U.S. Cl. 360—84 **4 Claims**



1. A record-reproduce system comprising:

a thin accordion pleated recording tape having a sensitive coating on at least one side thereof, said accordion pleats being so formed in said tape that said tape has a plurality of substantially V-shaped grooves formed on each side thereof, said substantially V-shaped grooves on one side of said tape being separated from each other by the substantially V-shaped projections formed by said substantially V-shaped grooves on the other side of said tape;

a guide mechanism having a plurality of substantially V-shaped grooves for accommodating said substantially V-shaped projections, said substantially V-shaped projections on the side of said tape adjacent said guide mechanism mating with said substantially V-shaped grooves in said guide mechanism;

at least one guide roller having a plurality of substantially V-shaped grooves formed in its surface for mating with said substantially V-shaped projections on the side of said tape adjacent said guide roller; and

a head assembly having a plurality of heads so formed that said head assembly has a plurality of substantially V-shaped projections for mating with said substantially V-shaped grooves of the side of said tape adjacent said head assembly.

3,893,182

INFORMATION CARD TRANSPORT, RECORDING AND READOUT MECHANISM

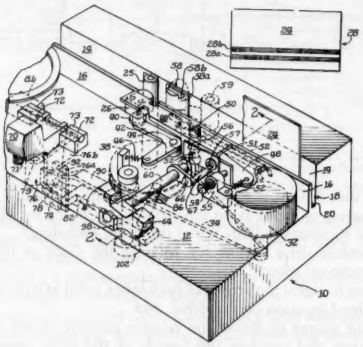
Josef Schmidt, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 367,513, June 6, 1973, Pat. No. 3,869,718.

This application Feb. 8, 1974, Ser. No. 440,600

Int. Cl. G11b *15/04, 25/04*

U.S. Cl. 360—88 **8 Claims**



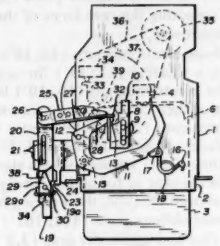
1. In combination with an apparatus for handling a substrate carrying an elongated magnetic media, the apparatus having a guide track through which the substrate is moved in a forward direction on a support base across and in engagement with a transducer head, the substrate being accessible to an operator while moving through the guide track, the improvement comprising:

blocking means positioned within the track at a location for engagement with the substrate prior to engagement of the substrate with the transducer head for blocking entrance of the substrate into the track laterally along a path substantially normal to its path of forward movement.

3,893,183
INSTANT STOP DEVICE FOR A TAPE PLAYER-RECORDER

Hajime Murakami, Onoda, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Aug. 30, 1972, Ser. No. 285,053
Claims priority, application Japan, Sept. 20, 1971, 46-85704The portion of the term of this patent subsequent to Mar. 26, 1991, has been disclaimed.
Int. Cl. G11b *15/18, 25/06*
U.S. Cl. 360—93 **5 Claims**



1. In a cartridge-type tape player adapted to receive an insertable cartridge and having a motor for powering a capstan shaft for moving the tape through the cartridge, the combination including

a latching mechanism including slide means having an arm portion positioned to be engaged by the cartridge being inserted into the player, and a spring biased linkage coupled to said slide means and actuated thereby so that said linkage moves the cartridge into a first position and holds the same against the capstan shaft in the play position, and

an instant stop device including an actuating lever, control means engageable with said actuating lever to limit the movement of said actuating lever from a first position wherein the cartridge is held in the play position to a second position wherein the cartridge is held a predetermined distance away from the capstan shaft, spring means biasing the actuating lever to said first position, means coupling said actuating lever to said linkage, said actuating lever being movable from said first position against the bias of said spring means to said second position to move said linkage against its spring bias such that said arm portion of said slide means moves the cartridge a predetermined distance away from the capstan shaft and out of said first position,

release of said actuating lever of said instant stop device from said second position causing said spring means to return said actuating lever to said first position, and causing said spring biased linkage to return the cartridge to said first position against the capstan shaft from said second position.

3,893,184
TAPE CARTRIDGE EJECTION MECHANISM

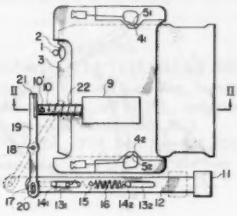
Toshio Ishigami, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 28, 1973, Ser. No. 345,820
Claims priority, application Japan, May 25, 1972, 47-60548
Int. Cl. G11b *23/04*
U.S. Cl. 360—93 **4 Claims**

1. A tape cartridge discharge mechanism for a tape recorder including a chassis, having a compartment formed by spaced parallel plates for slidably receiving an inserted cartridge and having frictional restraints for frictionally latching the cartridge in fully inserted position, said mechanism comprising:

means forming a hole within one of said chassis plates adjacent the leading end of the inserted cartridge,

an ejection lever having one end positioned within said hole and extending obliquely away from and lying across the leading end of said cartridge with said one end in contact with said cartridge only at the leading edge adjacent said plate hole, and forming a lever pivot point at said plate hole, and



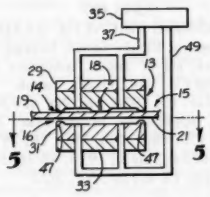
means for exerting an ejection force to the other end of said lever in a direction opposite that of cartridge insertion,

whereby; said cartridge is forcibly ejected by force amplification from said recorder by initial contact between the ejection lever and the leading edge of said cartridge adjacent said chassis plate hole.

3,893,185
FLUID BIASED HEAD ASSEMBLY

John J. Ring, 26251 Morena Dr., Mission Viejo, Calif. 92675, and William R. Miller, 3301 Yarba Linda Blvd. No. 202, Fullerton, Calif. 92631

Filed July 16, 1973, Ser. No. 379,236
Int. Cl. G11b *5/00*
U.S. Cl. 360—103 **25 Claims**



1. A head assembly for recording a signal on a medium, including:

a head disposed in recording relationship with the medium and responsive to the signal to alter the characteristics of the medium;

first means disposed opposite the head for maintaining the medium in a substantially contiguous relationship with the head;

second means for biasing the first means in the direction of the medium; and

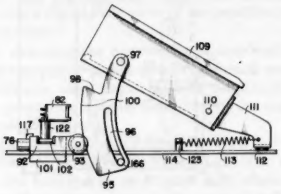
third means for introducing a fluid between the first means and the medium, the fluid having properties for opposing the bias of the second means on the first means to maintain the first means in a substantially frictionless relationship with the medium.

3,893,186

MAGNETIC RECORDER WITH MOVABLE HEAD BASE

Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 802,455, Feb. 26, 1969, Pat. No. 3,759,529. This application Mar. 1, 1973, Ser. No. 337,008
Claims priority, application Japan, Mar. 6, 1968, 43-14881
Int. Cl. G11b *5/54, 21/22, 15/32*
U.S. Cl. 360—105 3 Claims



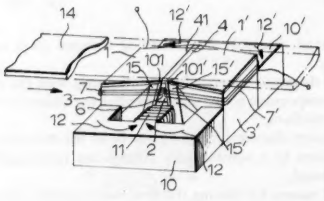
1. A magnetic recording and reproducing apparatus, comprising a movable head base on which a head means including at least one magnetic head is mounted, means for moving said head base between a first position where said head means is away from the tape of a mounted cassette and a second position where said head means is in abutment with said tape, means normally biasing said head base toward and into said second position, mounting means movable between playing and non-playing positions for mounting said cassette in said playing position, and engaging means movable between engaging and disengaging positions and urged towards said engaging position, said engaging means having a first portion which engages said head base at said engaging position, thereby restricting said head base to said first position and disengages at said disengaging position, thereby permitting said head base to move from said first position toward and into said second position, said engaging means further having a second portion which is coupled to and moved with said mounting means when said mounting means is moved toward and into said playing position, thereby moving said engaging means to said disengaging position and said head base into said second position.

3,893,187

SCANNING MAGNETIC HEAD

Kenji Kanai, Neyagawa; Eisuke Sawai, Katano, and Norimoto Nouchi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 13, 1974, Ser. No. 450,852
Claims priority, application Japan, Mar. 20, 1973, 48-31999; Mar. 20, 1973, 48-32000; Mar. 20, 1973, 48-32001; July 6, 1973, 48-76354; July 6, 1973, 48-76355
Int. Cl. G11b *5/12, 5/22*
U.S. Cl. 360—115 10 Claims



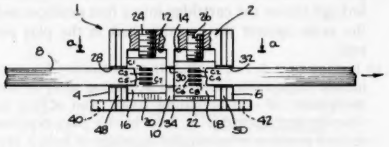
1. A magnetic head comprising:
a pair of pole pieces (1+101, 1'+101') made with soft magnetic thin films,
each pole piece of said air having a folded sheet comprising a top plane part (1, 1') for contacting a magnetic tape and an oblique plane part (101, 101'), both the top plane and the oblique plane being connected at an edge corner and having an acute angle inbetween,
said pair of pole pieces are so arranged that edge corners of both the pole pieces oppose each other defining a gap inbetween,
a center core (2) of a constant-permeability magnetic material sandwiched between a pair of end parts of said oblique plane parts 101 and 101', the center core being extended across the width of the pole pieces in the direction parallel to said gap,
a pair of outer poles or second poles (3,3') of magnetic material contacting the rear faces of the top plane parts (1,1'), respectively,
a pair of E-shape electromagnets (10, 10'), each of the pair comprizing a winding (11, 11') for accepting sawteeth current, the electromagnets (10, 10') being arranged in a manner that their center legs couple with both end faces of the center core (2) and their outer legs couple with both end faces of the outer poles (3, 3'), and
a signal winding (7,7') for accepting a signal current to be recorded in the tape or for taking out signal current to be reproduced from the tape, the winding being provided to surround said oblique parts (101, 101') of the soft magnetic thin film and said outer pole (3,3')together.

3,893,188

MULTICHANNEL MAGNETIC HEAD UNIT

William M. Shoemaker, 56 Porterfield Pl., Freeport, N.Y. 11520

Filed June 5, 1974, Ser. No. 476,400
Int. Cl. G11b *5/28, 5/50, 5/56*
U.S. Cl. 360—121 14 Claims



1. A multichannel magnetic head unit for use with magnetic tape, comprising
a pair of recording-reproducing head assemblies with a plurality of magnetic heads and at least three recording-reproducing channels;
one of said head assemblies being positioned behind the other head assembly such that the axes of its recording-reproducing channels longitudinally alternate with the axes of the channels of said other head assembly;
a head nest which contains both said head assemblies and has a cross-wall between said head assemblies and an end wall on an opposite side of at least said one head assembly; and
said cross-wall and said end wall each having aligned guide means for receiving and guiding the magnetic tape.

3,893,189

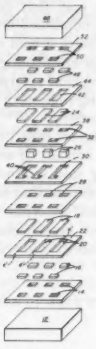
MAGNETIC RECORD/REPRODUCE HEAD AND MANUFACTURING METHOD THEREFOR

Willem L. Kronn, Putten, Netherlands, assignor to Spin Physics, Inc., San Diego, Calif.

Filed Jan. 14, 1974, Ser. No. 433,038
Int. Cl. G11b *5/00*
U.S. Cl. 360—127 9 Claims

3. The method of making an array useful in the manufacture of a magnetic record and/or reproduce head, comprising the steps of:
a. abutting a first lamination of ceramic-convertible glass having an aperture, and a ceramic spacer within said aperture, against a base;

b. placing a second lamination of ceramic-convertible glass having an aperture, and a ferrite member within said aperture, in contact with said first lamination so that said spacer and ferrite are in contact with each other;
c. placing a third lamination of ceramic-convertible glass having an aperture, and a ceramic spacer within said aperture, so that (1) the spacer within the aperture of said



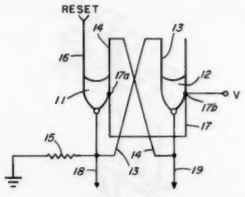
third lamination and said ferrite are in contact with each other, and (2) said second lamination is sandwiched between said first and third laminations;
d. sandwiching said three laminations between said base and a cap; and
e. devitrifying said glass into ceramic, whereby said sandwiches fuse into an integral assembly.

3,893,190

POWER-UP MASTER CLEAR CONTROL FLIP-FLOP

Douglas Alan Robbins, Saint Paul, Minn., assignor to Control Data Corp., Minneapolis, Minn.

Filed June 10, 1974, Ser. No. 478,817
Int. Cl.[2] H03K *3/286*
U.S. Cl. 307—215 **7 Claims**



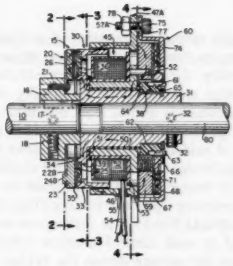
1. Apparatus providing a predetermined master clear logic signal reaching a predetermined one of two distinct logic states upon lifting the apparatus power terminal voltage to operating level, and the other logic state responsive to a reset logic signal following power voltage reaching operating level, comprising
a. a flip-flop whose output is the master clear logic signal, comprising first and second logic gates of substantially identical electrical characteristics, each of the type having a transistor-controlled output achieving the logic state whose voltage is closest to 0 volts when the transistor impedance is lowest, each powered by a single common source, and each having at least two inputs, one input of one gate receiving the reset signal and responsive thereto setting the flip-flop to the condition wherein the logic state of the first gate is that represented by the voltage level closest to zero; and
b. a steering impedance connecting the output of the second logic gate to ground, and having a sufficiently low value to predispose the flip-flop to invaribly reach the condition wherein the logic state of the second gate is that represented by voltage closest to zero, and having sufficiently high value to allow the output voltage to attain acceptable logic levels and prevent overloading of the logic gates.

3,893,191

ELECTROMAGNETIC CLUTCH BRAKE ASSEMBLY

Joseph Gold, Springfield; Edward Kim-Eng, Newark, and Paul Emile Plante, Mountainside, all of N.J., assignors to Valcor Engineering Corporation, Kenilworth, N.J.

Filed Mar. 14, 1974, Ser. No. 451,304
Int. Cl.[2] H02K *7/10*
U.S. Cl. 310—76 **11 Claims**



1. Electromagnetic clutch brake assembly comprising:
a. clutch armature having a frictional engaging face which is movable between an engaged power-transmitting position and a disengaged no-power position,
b. clutch biasing means contacting said clutch armature for biasing said clutch face to its disengaged position,
c. rotor positioned adjacent said armature and having a frictional engaging face positioned to be engaged and driven by said clutch armature face when said clutch face is in its engaged position,
d. said clutch biasing means comprising spider means having a plurality of spring arms, means connecting said arms to said armature, and means positioning said spider a predetermined distance from said rotor,
e. brake armature positioned adjacent to said rotor and having a frictional engaging face movable between an engaged braking position and a disengaged free position,
f. brake biasing means contacting said brake armature for biasing said brake face to its engaged braking position,
g. brake stop means positioned adjacent said brake face and having a fixed frictional engaging face positioned to engage and stop said brake face when said brake face is in its engaged position,
h. electromagnetic coil associated with said rotor for magnetically displacing said clutch face against the opposing force of said clutch biasing means toward and in engagement with said rotor means and magnetically displacing said brake face against the opposing force of said brake biasing means away from and out of engagement with said stop means in response to the activation of said coil,
i. said clutch and brake biasing means having biasing forces relative to each other and to the magnetic forces required to engage and disengage said clutch and brake faces such that clutch means engages before said brake means disengages on activation of said coil, and said brake means engages before said clutch means disengages on deactivation of said coil.

3,893,192
CONVERTER FOR MEASURED QUANTITIES

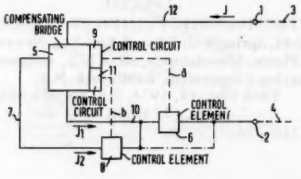
Arne Jensen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 270,975, July 12, 1972, abandoned. This application Mar. 13, 1974, Ser. No. 450,592

Claims priority, application Germany, Feb. 25, 1971, 2108892

Int. Cl. G01r *27/02*

U.S. Cl. 324—65 R **12 Claims**



1. An electric circuit arrangement for supplying an electric signal current in dependence upon a measured value of a physical quantity, the circuit arrangement comprising a compensating bridge circuit having a plurality of arms including fixed value resistances and at least one measuring resistance, in which bridge circuit the signal current is supplied through at least one of said fixed value resistances for restoring the balance of the bridge circuit, a control element connected in series with the bridge circuit, and means to derive a control signal in dependence upon the voltage drop across at least one of the other of said fixed value resistances and to supply said control signal to said control element whereby the control element varies the voltage across the bridge circuit such that the sum of the currents flowing through the bridge circuit is maintained substantially constant.

3,893,193
HERMETICALLY HOUSED ELECTRICAL COMPONENT DEVICE

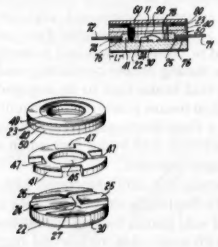
Shinzo Anazawa; Seiichi Ueno, and Isamu Nagasako, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 21, 1974, Ser. No. 444,347

Claims priority, application Japan, Feb. 22, 1973, 48-21864

Int. Cl.[2] **H01L** *23/02, 23/32;* **H01P** *1/00*

U.S. Cl. 333—84 M **6 Claims**



1. An electrical component device including

a ceramic substrate having a first and a second major surface;

a plurality of first metallized layers formed on said first major surface of said substrate, each of said first metallized layers including a bonding region and an external lead connecting region;

a second metallized layer formed on said second major surface of said substrate;

at least one electrical component mounted adjacent to said first major surface of said substrate, said electrical component having electrodes;

means for electrically connecting said electrodes of said electrical component to said bonding regions of said first metallized layers;

a first ceramic member having a first and a second surface and a central aperture, said first surface of first ceramic member being disposed on said first major surface of said substrate so that said first ceramic member intersects each of said first metallized layers between said bonding region and said external lead connecting region;

a number of external connecting leads,

means for connecting said external connecting leads to said external lead connecting regions of said first metallized layers;

a second ceramic member;

a third metallized layer, said third metallized layer being formed on a first surface of said ceramic member;

means for attaching said second ceramic member to said first ceramic member so that said third metallized layer is mounted above said external lead connecting regions of said first metallized layers; and

cover means attached to said second ceramic member.

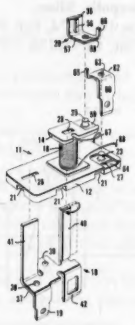
3,893,194
SIMPLE RELAY STRUCTURE

Rodney Hayden, Stoney Creek, and Gordon M. Davidson, Grimsley, both of Canada, assignors to TRW Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 368,398, June 8, 1973, abandoned, which is a continuation of Ser. No. 277,843, Aug. 3, 1972, abandoned. This application Feb. 27, 1974, Ser. No. 446,554

Int. Cl. H01h *45/04*

U.S. Cl. 335—202 **22 Claims**



1. A relay structure comprising: a coil form part, said coil form part including a coil supporting tube and a flange at each end of said tube, said tube and said flanges being formed as one piece of an insulating material; a stationary core part, said core part including a mounting flange and two, parallel, spaced apart core legs joined to and extending from said mounting flange, one of said core legs being inserted within said coil supporting tube; and a movable armature structure fastened in cantilever manner to the other of said core legs

proximate the end thereof remote from said mounting flange, said armature structure including a movable core part supported thereby in overlapping, spaced relationship to the end of said one core leg remote from said mounting flange.

3,893,195

GANGED VARIABLE RESISTOR

Hiroshi Matsui, Neyagawa; Hisao Kitahara, Takatsuki, and Tadashi Mihara, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

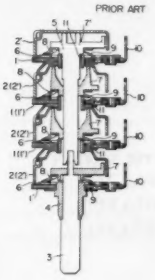
Filed Jan. 17, 1974, Ser. No. 434,289

Claims priority, application Japan, Jan. 20, 1973, 48-9763[U]; Jan. 20, 1973, 48-9764[U]

Int. Cl. H01l *5/02*

U.S. Cl. 338—132 **6 Claims**

1. An improved ganged variable resistor assembly including a plurality of variable resistors, wherein the improvement comprises a cover member having at least a bottom wall and a pair of side walls, an actuating shaft supported by and extending through a bearing provided on said bottom wall, said actuating shaft including an extension, a plurality of bent portions formed on the sides of each of said side walls and arranged at predetermined intervals to securely hold the insulating bases of said plurality of variable resistors in place, and a plurality of brushes mounted on said extension of said actuating shaft whereby each of said brushes is slidable on the associated one of resistance elements provided on said insulating bases.



DESIGN PATENTS

GRANTED JULY 1, 1975

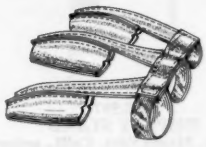
ERRATA

For CLASS	See PATENT NO.
019–060	235,649
010–062	235,650
034–015	235,675

DESIGNS

JULY 1, 1975

235,589
ARCHERY FINGER GLOVE
George D. Birnie, Pine Bluff, Ark., assignor to Brunswick Corporation, Skokie, Ill.
Filed Feb. 28, 1973, Ser. No. 336,540
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



235,590
SPORT SHIRT
Vera Naumovski, 60 Roseland Drive, Toronto, Ontario, Canada
Filed Mar. 2, 1973, Ser. No. 337,497
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—208

235,591
BOOTEE OR SIMILAR ARTICLE
Basil D. Huff, 94 Ferry Road, Breslaw, Wilkes-Barre, Pa. 18702
Filed Dec. 28, 1973, Ser. No. 429,102
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—278

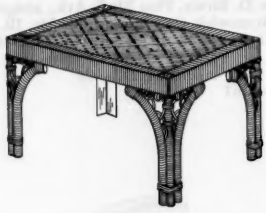
235,592
CURVED HAIR BRUSH
Norman Kirk, 9 Rosedale Ave., Montclair, N.J. 07042
Filed Jan. 30, 1974, Ser. No. 437,847
Term of patent 14 years
Int Cl. D4—*02*
U.S. Cl. D4—31

235,593
SIDE CHAIR
Maxwell E. Pearson, Zionville, Pa., assignor to Knoll International, Inc., New York, N.Y.
Original design application Sept. 16, 1968, Ser. No. 13,539, now Patent No. 219,376. Divided and this application June 17, 1970, Ser. No. 23,531
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30

235,594
DISPLAY CAROUSEL
Gerald Cohn, New York, N.Y., assignor to Remember When Sweet Shoppe, Inc., Valley Stream, N.Y.
Filed Apr. 5, 1973, Ser. No. 348,296
Term of patent 14 years
Int Cl. D6—*04*
U.S. Cl. D6—154

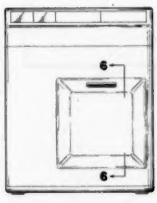
235,595
DISPLAY STAND
Amilcare Dogliotti, Neive, Italy, assignor to P. Ferrero & C. S.p.A., Alba, Italy
Filed May 29, 1973, Ser. No. 364,475
Claims priority, application Italy Apr. 6, 1973
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—24

235,596
TABLE
Leonard V. Birnbaum, Highland Park, Ill., assignor to Burwood Products Company, Chicago, Ill.
Filed July 2, 1973, Ser. No. 375,821
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

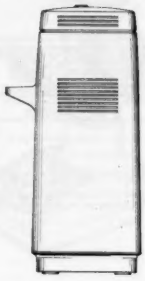


235,597
DISPLAY STAND
Roland E. Loomis, Menlo Park, Calif., assignor to House of Health, Inc., Santa Clara, Calif.
Filed July 12, 1973, Ser. No. 378,563
Term of patent 14 years
Int. Cl. D30—*20*
U.S. Cl. D6—24

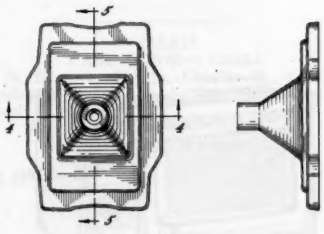
235,598
SHAVE CREAM DISPENSER
Theodore R. Peterson, Hinsdale, Ill., assignor to The Gillette Company
Filed Sept. 26, 1973, Ser. No. 400,933
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D6—95



235,599
SHAVE CREAM DISPENSER
John L. Benty, Maplewood, N.J., and Daniel Nickles, Brooklyn, N.Y., assignors to The Gillette Company
Filed Nov. 12, 1973, Ser. No. 415,138
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D6—95

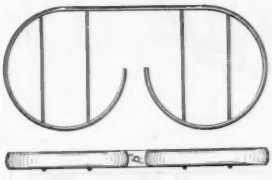


235,600
COMBINED ESCUTCHEON PLATE AND SUPPORTING POST
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 26, 1973, Ser. No. 427,838
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—86

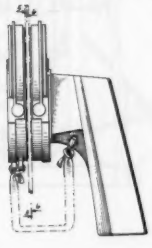


235,601
FLOWERPOT HOLDER
Rick Lewis, 1441 Humboldt, San Pablo, Calif. 94806
Filed Apr. 3, 1974, Ser. No. 457,583
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D6—113

235,602
SUPPORT FOR ASHTRAYS, AEROSOL CONTAINERS AND OTHER ARTICLES
Willard H Sahloff, Bridgeport, Conn., assignor to Handy Andy Specialty Co., Inc., New York, N.Y.
Filed May 17, 1974, Ser. No. 470,774
Term of patent 14 years
Int Cl. D6—*04*
U.S. Cl. D6—86

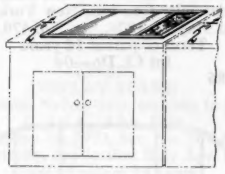


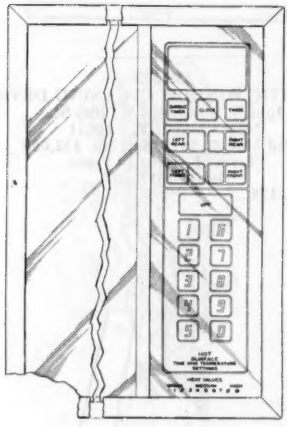
235,603
MAGNETIC WINDOW CLEANING DEVICE
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Mar. 7, 1972, Ser, No. 232,655
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—179



235,604
SAUCEPAN OR THE LIKE
Alice Kiernan, Lewiston, Maine, and Patricia A. Luzier and Gregory Mirow, Corning, N.Y., assignors to Corning Glass Works
Filed Apr. 20, 1973, Ser. No. 353,121
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—97

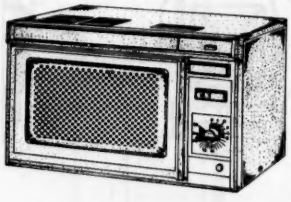
235,605
DOMESTIC BUILT-IN COOKTOP HAVING SMOOTH COOKING SURFACE AND TOUCH CONTROL PANEL
David D. Shelley, Romeo, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 3, 1973, Ser. No. 356,768
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—121



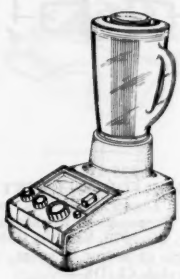


235,606
TOUCH CONTROL PANEL FOR THE CONTROL CONSOLE OF A DOMESTIC COOKING APPLIANCE
Paul E. Petkwitz, Highland, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 3, 1973, Ser. No. 356,755
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—135

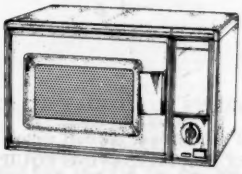
235,607
MICROWAVE OVEN
Hiroshi Kikuchi, Ikeda, Akiyoshi Koshiro, Nara, and Yoshiaki Kawata, Nara, Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed June 13, 1973, Ser. No. 369,761
Claims priority, application Japan Feb. 22, 1973
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



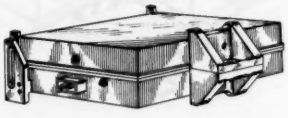
235,608
MIXER
Toshihiko Yoshida, Suita, Yukio Hirano, Minoo, Hiroshi Toyoda, Higashi-Yodogawa-ku, and Shyusuke Inoue, Ibaragi, Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed Aug. 3, 1973, Ser. No. 385,583
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—154



235,609
MICROWAVE OVEN
Yoshiaki Kawata, Nara, and Tetuso Kawasaki, Kashihara, Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed May 24, 1974, Ser. No. 473,316
Claims priority, application Japan Dec. 11, 1973
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128

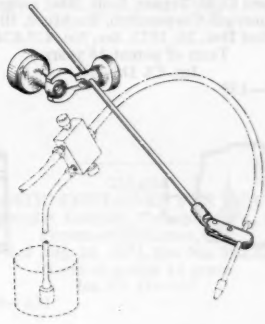


235,610
CASING FOR A GRILL
Andre N. Giguere, 223 St. Charles St., and Real A. Thibodeau, 594 2nd Ave., both of Beauceville, Quebec, Canada
Filed July 20, 1973, Ser. No. 381,057
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—88



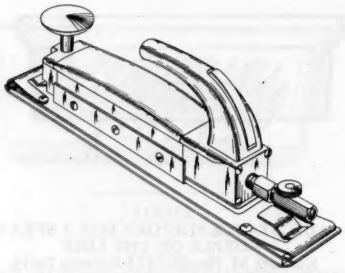
235,611
BOWL
Gerald Gulotta, New City, N.Y., assignor to Block China Corporation, New York, N.Y.
Filed Dec. 20, 1973, Ser. No. 426,897
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—23

235,612
ADJUSTABLE SUPPORT FOR A SPRAY NOZZLE OR THE LIKE
Kenneth M. Daniels, 125 Roberta Drive, Woodside, Calif. 94062
Filed Mar. 21, 1973, Ser. No. 343,203
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—72

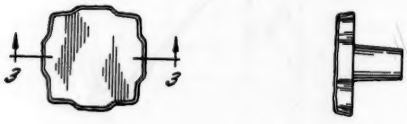


235,613
SCREW STARTER
John Donald Olson, Kensington, and Wojciech Stanislaw Gutowski, Southington, Conn., assignors to The Stanley Works, New Britain, Conn.
Original design application Feb. 14, 1972, Ser. No. 226,381, now Patent No. 233,132, dated Oct. 8, 1974. Divided and this application July 9, 1973, Ser. No. 377,803
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—86

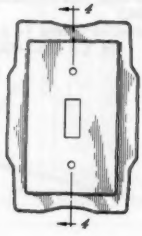
235,614
PNEUMATIC SANDER
James O. Taylor, Lantana, Fla., assignor to Florida Pneumatic Manufacturing Corp., Boynton Beach, Fla.
Filed Nov. 6, 1973, Ser. No. 413,397
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62



235,615
KNOB
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 26, 1973, Ser. No. 427,836
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—139



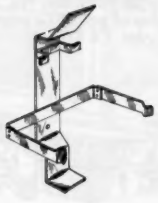
235,616
ESCUTCHEON
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 26, 1973, Ser. No. 428,363
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



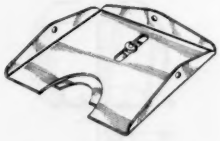
235,617
TURN FOR A DEADLOCK
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 26, 1973, Ser. No. 428,389
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—132

235,618
THUMB PIECE FOR AN ENTRY LOCK
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 26, 1973, Ser. No. 430,948
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—134

235,619
BRACKET FOR LIFESAVING EQUIPMENT
Theodore Ziaylek, Jr., Yardley, Pa., assignor to Ziamatic Corp., Yardley, Pa.
Filed May 3, 1974, Ser. No. 466,698
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D8—247

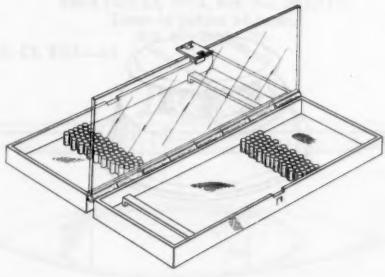


235,620
RODENT PROTECTIVE BOTTOM SHIELD FOR TELEPHONE PEDESTAL
Arthur Everett Forseth, Halstad, Minn. 56548
Filed Jan. 27, 1972, Ser. No. 221,478
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—263

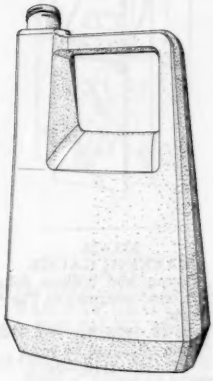


235,621
PACKAGING CONTAINER FOR FOOD OR THE LIKE
Richard S. Cawrse, Huron, Ohio, assignor to Cawrse Dairy, Inc., Lorain, Ohio
Filed May 14, 1973, Ser. No. 360,313
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

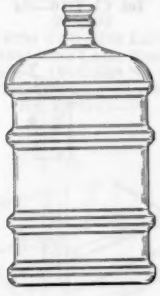
235,622
STORAGE CONTAINER FOR FISHING HOOKS AND LEADERS
John Luther Herring, 2626 S. 48th Terrace, Kansas City, Kans. 66106
Filed June 18, 1973, Ser. No. 370,954
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—235



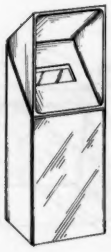
235,623
JUG
George Torrent Lloveras, 330 Haven Ave., New York, N.Y. 10033
Filed Aug. 3, 1973, Ser. No. 385,554
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



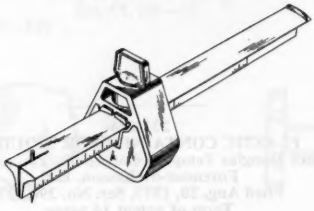
235,624
PLASTIC CONTAINER FOR LIQUIDS
Wallace Douglas Templin, Coraopolis, Pa., assignor to Foremost-McKesson, Inc.
Filed Aug. 20, 1973, Ser. No. 390,127
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—131



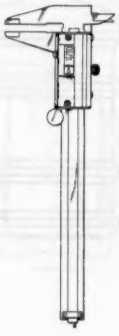
235,625
DIGITAL CLOCK HOUSING
John E. Studer, Jr., Raritan Township, N.J., assignor to Delta Transnational, Inc., New York, N.Y.
Filed Dec. 26, 1972, Ser. No. 318,695
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D10—1



235,626
MARKING GAUGE
Laird F. Covey, Easton, and William John Hildebrandt, West Simsbury, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed June 28, 1973, Ser. No. 374,645
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71

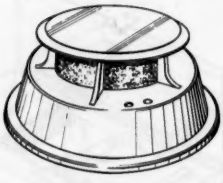


235,627
DIGITAL VERNIER CALIPER
Kenju Uchino, Utsunomiya, Japan, assignor to Yehan Numata, Yokohama, Japan
Filed July 23, 1973, Ser. No. 381,662
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73

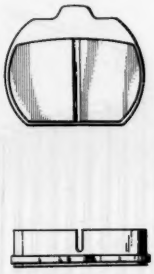


235,628
DIGITAL VERNIER CALIPER
Goro Nishigata, Kawasaki, Japan, assignor to Yehan Numata, Yokohama, Japan
Filed July 23, 1973, Ser. No. 381,664
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73

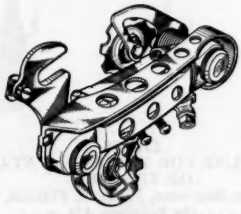
235,629
OPTICAL SMOKE DETECTOR
Donald F. Steele, River Road, Cohasset, Mass. 02025, and Hugh P. Thornton, Jr., Kelly Road, Acton, Mass. 01720
Filed Sept. 28, 1973, Ser. No. 401,941
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—106



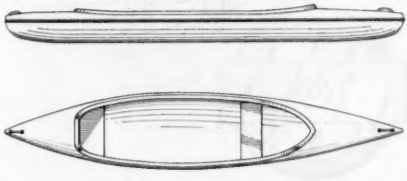
235,630
DISC BRAKE FRICTION PAD ASSEMBLY
Heinrich Bernhard Rath, Koblenz-Luetzel, Germany, assignor to Girling Limited, Birmingham, England
Filed Oct. 19, 1972, Ser. No. 300,778
Claims priority, application Great Britain Apr. 21, 1972
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—180



235,631
DERAILLEUR
Keizo Shimano and Norio Sato, Osaka, Japan, assignors to Shimano Industrial Co., Ltd.
Filed Mar. 12, 1973, Ser. No. 340,364
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—124

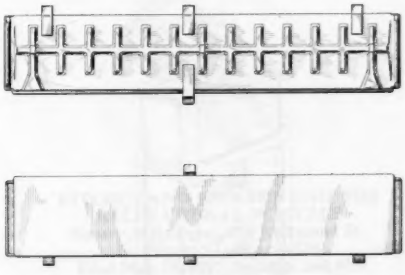


235,632
CANOE
Frederick D. Blake, 3207 Montrose Road, St. Paul, Minn. 55119
Filed July 23, 1973, Ser. No. 381,717
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—63

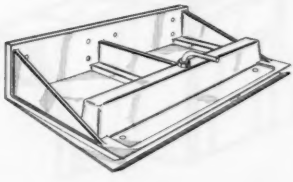


235,633
VEHIICLE MUD GUARD
Cecil L. Cooper, 300 E. John, Carson City, Nev. 89701
Filed July 26, 1973, Ser. No. 382,680
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—185

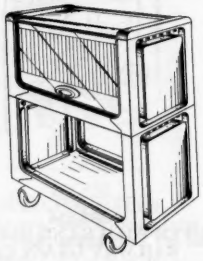
235,634
HATCH COVER WITH HAND HOLD FOR TOP OF RAILWAY GRAIN CAR
William L. Hall, Box 353, Maplewood Ave., Lucasville, Ohio 45648
Filed Oct. 26, 1973, Ser. No. 410,285
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D12—43

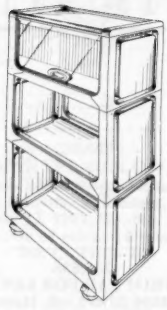


235,635
ADJUSTABLE TRIM TAB FOR LEVELING A BOAT
Gerald J. Curtis, 8806 Glen Loch, Houston, Tex. 77017
Filed Feb. 4, 1974, Ser. No. 439,131
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—70

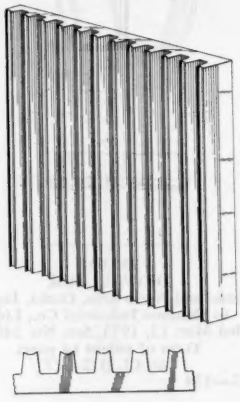


235,636
SERVING CART FOR FOOD AND THE LIKE
Takeo Teranishi, Fujiidera, Japan, assignor to Kabushiki Kaisha Tadapura, Fujiidera, Japan
Continuation-in-part of abandoned design applications Ser. No. 288,345 and Ser. No. 288,346, both Sept. 12, 1972. This application Feb. 14, 1974, Ser. No. 442,414
Claims priority, application Japan Mar. 30, 1972
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—22

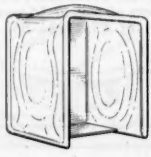




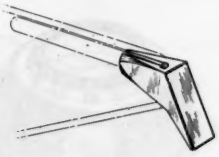
235,637
EXTERIOR MOLDED PANEL FOR DATA PROCESSING UNITS
Richard G. Clayton, Detroit, Mich., assignor to Burroughs Corp., Detroit, Mich.
Filed Aug. 1, 1973, Ser. No. 384,488
Term of patent 14 years
Int. Cl. D25—*01*; D14—*99*
U.S. Cl. D13—1 J



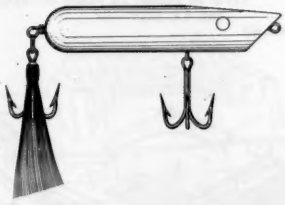
235,638
ENCLOSURE FOR TELEPHONE STATION OR THE LIKE
Matti Johannes Suuronen, Westend, Finland, assignor to Oy Polykem AB
Filed Jan. 11, 1974, Ser. No. 432,538
Claims priority, application Finland July 16, 1973
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 L



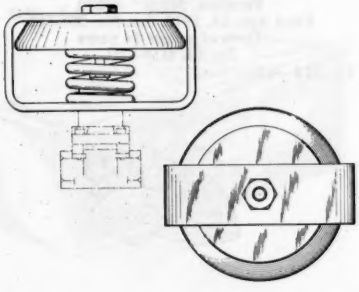
235,639
SIZE TAG FOR GARMENT HANGER
Maurice Cohen, 3580 NW. 52nd St., Miami, Fla. 33142
Filed May 14, 1973, Ser. No. 359,883
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D19—13



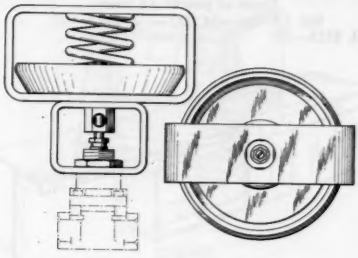
235,640
FISHING LURE
William H. Hills, 25 Woodhull Road, East Setauket, N.Y. 11733
Filed Mar. 29, 1974, Ser. No. 456,062
Term of patent 14 years
Int. Cl.. D22—*05*
U.S. Cl. D22—27



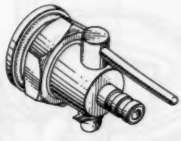
235,641
ACTUATOR FOR A VALVE
Linwood P. Erickson, Warren, R.I., assignor to G. W. Dahl Company, Inc., Bristol, R.I.
Filed June 5, 1973, Ser. No. 367,351
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



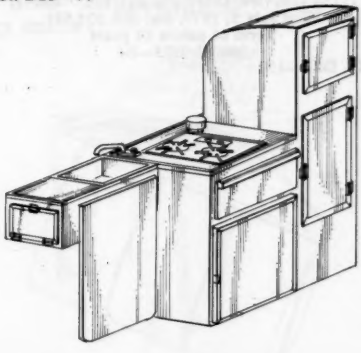
235,642
ACTUATOR FOR A VALVE
Linwood P. Erickson, Warren, R.I., assignor to G. W. Dahl Company, Inc., Bristol, R.I.
Filed June 5, 1973, Ser. No. 367,352
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



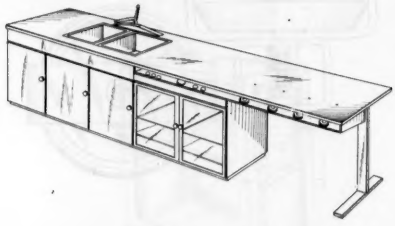
235,643
PETCOCK
Wade N. Zimmerman III, Los Angeles, Calif. (6833 Agnes Ave., North Hollywood, Calif. 91605)
Filed July 23, 1973, Ser. No. 381,391
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



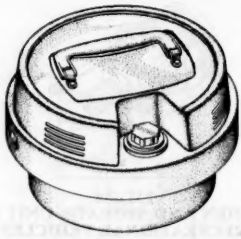
235,644
KITCHEN AND STORAGE UNIT FOR RECREATIONAL VEHICLES
Roosevelt Rastegar, 836 Richmond St., El Cerrito, Calif. 94530
Filed May 31, 1973, Ser. No. 365,489
Term of patent 7 years
Int. Cl. D23—*02*
U.S. Cl. D23—50



235,645
COMBINED COUNTER, SINK, STORAGE AND INDUCTION HEATING ELECTRIC COOKING RANGE UNIT
Philip H. Peters, Jr., Washington County, and John L. Matrone, Albany County, N.Y., assignors to Environment/One Corp., Schenectady, N.Y.
Original design application Sept. 23, 1971, Ser. No. 183,289. Divided and this application Nov. 12, 1973, Ser. No. 424,105
Term of patent 14 years
Int. Cl. D6—*04;* D7—*02;* D23—*02*
U.S. Cl. D23—50

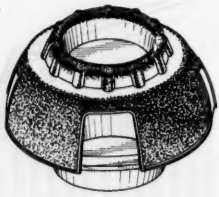


235,646
HEATER, CIRCULATOR, AND TEMPERATURE CONTROL FOR A FLUID-TYPE HEATING PAD
Bhaskar Kumar Agarwala, West Los Angeles, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.
Filed Aug. 24, 1973, Ser. No. 391,061
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—77

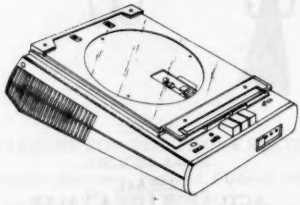


235,647
PLURAL WICK-TYPE DISPENSER ASSEMBLY
Arthur G. Howard, Indianapolis, Ind.
(1134 Golfview Drive, Carmel, Ind. 46032)
Filed July 5, 1973, Ser. No. 371,581
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

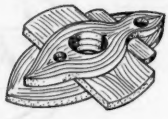
235,648
AIR FRESHENER HOLDER OR SIMILAR ARTICLE
Victor F. Anderson, Wenonah, N.J., assignor to Shell Oil Company, Houston, Tex.
Filed May 2, 1974, Ser. No. 466,104
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



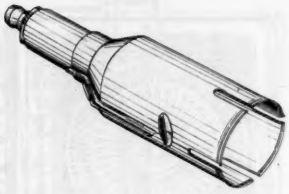
235,649
TEACHING MACHINE
Masatoshi Hideshima, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Jan. 12, 1973, Ser. No. 323,036
Claims priority, application Japan July 7, 1972
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—60



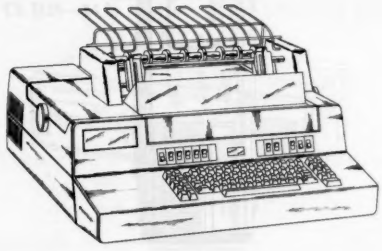
235,650
MODEL OF A BIRTH CANAL
Karen A. Haddad, 352 W. Woodland, Ferndale, Mich. 48220
Filed Apr. 16, 1973, Ser. No. 351,466
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D10—62



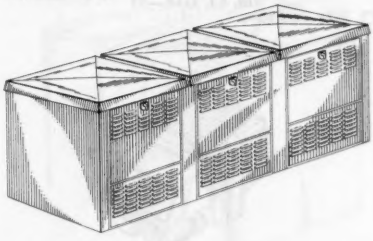
235,651
SUPPRESSOR FOR INTERNAL COMBUSTION ENGINE IGNITION SYSTEMS
Norman Alfred Jukes, 16 Norman Road, Walsall, England
Filed Mar. 1, 1972, Ser. No. 231,090
Claims priority, application Great Britain Oct. 6, 1971
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D26—1 J



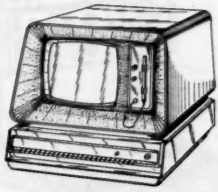
235,652
COMMUNICATIONS TERMINAL
Henry Kapper and Edward J. Sabella, Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed June 14 ,1974, Ser. No. 479,331
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



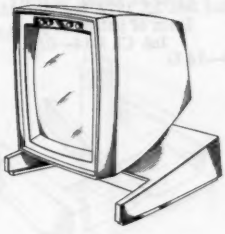
235,653
HOUSING FOR ELECTRICAL UNIT
Anton J. Bozich, Virginia, Minn., assignor to Malton Electric Company, Virginia, Minn.
Filed June 18, 1973, Ser. No. 370,741
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—5 R



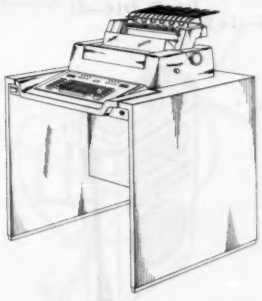
235,654
DISPLAY TERMINAL
David K. Crabbe, Auburn, Leonard F. Halio, Stow, and John W. Carroll, Pepperell, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Sept. 26, 1973, Ser. No. 401,924
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



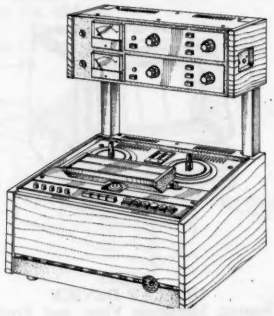
235,655
DISPLAY DEVICE
Carl J. Clement, Mountain View, and Fred H. Stengel and Kenneth S. Campbell, Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 20, 1973, Ser. No. 426,878
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



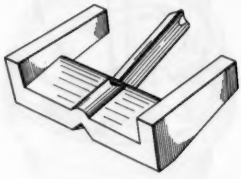
235,656
TERMINAL STATION
Henry Kapper and Edward J. Sabella, Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed June 14, 1974, Ser. No. 479,333
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



235,657
TAPE RECORDER
Haruo Simizu and Nobuyuki Ueda, Yokohama, Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed July 24, 1973, Ser. No. 382,219
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B

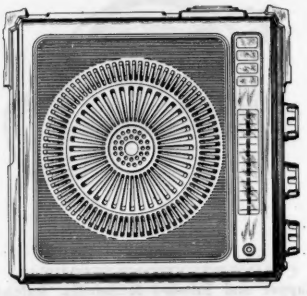


235,658
PHONOGRAPH STYLUS ASSEMBLY
Robert M. Kita, Mount Prospect, and Eduard A. Rusch, Bloomingdale, Ill., assignors to Shure Brothers Incorporated, Chicago, Ill.
Filed Jan. 23, 1974, Ser. No. 435,862
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 D

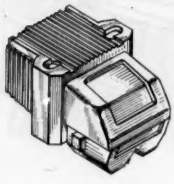


235,659
TAPE RECORDER
Takemi Ebata, Kyoto, Kunishige Mika, Katano, Osaka, and Yasuo Hattori, Tokyo, Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed Mar. 7, 1974, Ser. No. 449,210
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

235,660
COMBINED PORTABLE 8-TRACK TAPE PLAYER AND AM/FM TUNER
Richard Culbertson, Manlius, and Cornelius W. Cristie, Jr., Fulton, N.Y., assignors to General Electric Company
Filed July 11, 1974, Ser. No. 487,568
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14 B

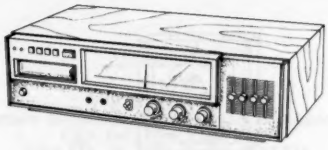


235,661
PHONOGRAPH CARTRIDGE
Robert L. Deschamps, Wheaton, Ill., assignor to Shure Brothers Incorporated, Evanston, Ill.
Filed Apr. 11, 1973, Ser. No. 350,059
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 D

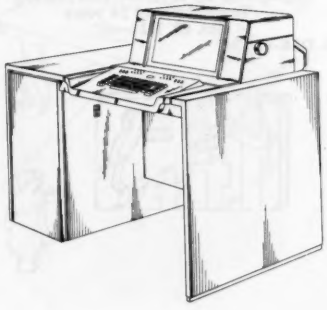


235,662
MICROPHONE
Dana W. Mox, Glenview, Ill., assignor to Shure Brothers Incorporated, Chicago, Ill.
Filed Feb. 6, 1974, Ser. No. 440,248
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 J

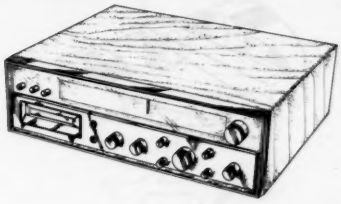
235,663
COMBINED AMPLIFIER AND CASSETTE TAPE RECORDER
Toshio Igo, Katano, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed May 7, 1974, Ser. No. 467,840
Claims priority, application Japan Nov. 12, 1973
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14 L



235,664
WORKSTATION
Henry Kapper and Edward J. Sabella, Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.
Filed June 14, 1974, Ser. No. 479,332
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



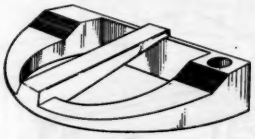
235,665
COMBINED AMPLIFIER AND CASSETTE TAPE RECORDER
Yasuhiko Funabiki, Kobe, and Koji Marumoto, Minoo, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed May 16, 1974, Ser. No. 470,555
Claims priority, application Japan Nov. 19, 1973
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 L



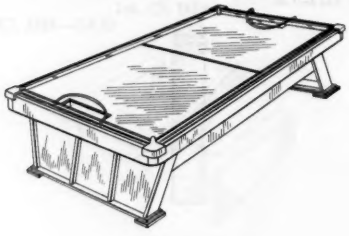
235,666
CIGARETTE LIGHTER
Nobuyoshi Moriya, Urawa-shi, Saitama, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan
Filed Feb. 20, 1974, Ser. No. 444,134
Claims priority, application Japan Aug. 31, 1973
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36

235,667
RELIGIOUS PLAQUE
Winnie C. Whitmire, P.O. Box 203, Deming, N. Mex. 88030
Filed Jan. 24, 1972, Ser. No. 220,547
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A

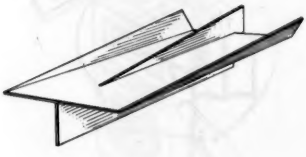
235,668
GOLF CLUB HEAD
Harold Edward Swash, 5 Bushby's Park, Formby, Lancashire, England
Filed June 14, 1972, Ser. No. 262,487
Claims priority, application Great Britain Jan. 11, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



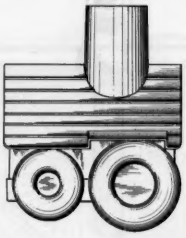
235,669
GAME TABLE
Robert W. Le Mieux, Spring Lake, Mich., assignor to Brunswick Corporation, Skokie, Ill.
Filed May 8, 1973, Ser. No. 358,306
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 J



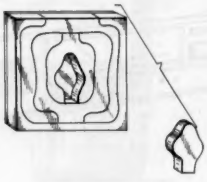
235,670
TOY KITE
Bernard R. Barrett, 308 W. Graham St., Lombard, Ill. 60148
Filed July 2, 1973, Ser. No. 375,686
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AF



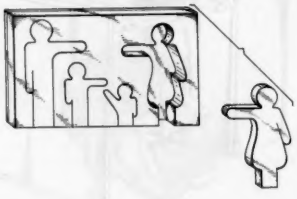
235,671
TOY VEHICLE
Norman Spiegel, New York, N.Y., assignor to Nasta Industries, Inc., New York, N.Y.
Filed July 5, 1973, Ser. No. 376,821
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



235,672
PUZZLE TOY
Charles B. Root, Morristown, N.J., assignor to Educational Design Associates
Filed Aug. 14, 1973, Ser. No. 388,132
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M

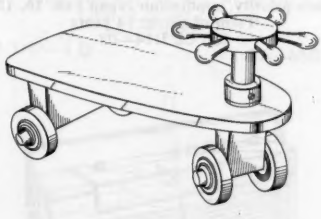


235,673
PUZZLE TOY
Charles B. Root, Morristown, N.J., assignor to Educational Design Associates
Filed Aug. 14, 1973, Ser. No. 388,133
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



235,674
HAND OPERATED CULTIVATOR
Don L. Calder, 936 W. 8th Ave., Mesa, Ariz. 85201
Filed Oct. 3, 1973, Ser. No. 403,217
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D35—2 A

235,675
RIDING TOY
Matthew Moustakas, Mercerville, N.J., assignor to CBS, Inc., New York, N.Y.
Filed Feb. 19, 1974, Ser. No. 443,231
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

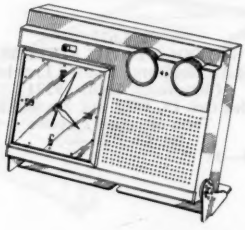


235,676
PENDANT OR THE LIKE
Alexander Pappas, 222 10th St., Palisades Park, N.J. 07650
Filed Feb. 14, 1974, Ser. No. 442,678
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 B

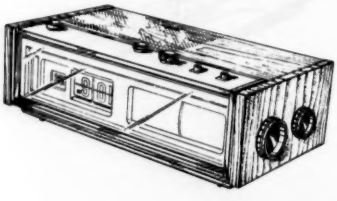
235,677
OUTDOOR LIGHT FIXTURE
Gerald M. Goldberg, 10501–2 Larwin Ave., Chatsworth, Calif. 91311
Filed Oct. 19, 1973, Ser. No. 408,580
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

235,678
OUTDOOR LIGHT FIXTURE
Gerald M. Goldberg, 10501–2 Larwin Ave., Chatsworth, Calif. 91311
Filed Oct. 9, 1973, Ser. No. 404,490
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

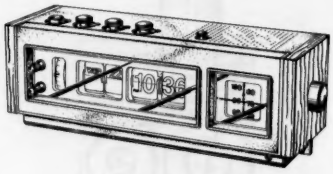
235,679
CLOCK-RADIO
Lester Kenneth Franklin, deceased, late of Toronto, Ontario, Canada, by Mildred P. Franklin, executrix, Toronto, Ontario, Canada
Filed July 7, 1972, Ser. No. 269,758
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D56—4 B



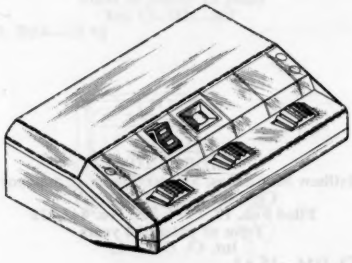
235,680
CLOCK RADIO
Tomio Fujiwara, Osaka, and Benito Mishiro, Sakai, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Apr. 20, 1973, Ser. No. 353,171
Claims priority, application Japan Oct. 20, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



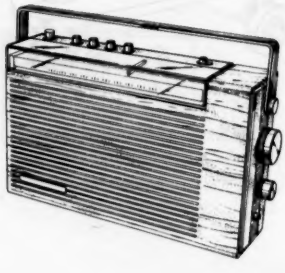
235,681
DIGITAL CLOCK RADIO
Nobumitsu Matsumura, Sakurai, and Benito Mishiro, Sakai, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed May 4, 1973, Ser. No. 357,139
Claims priority, application Japan Nov. 10, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



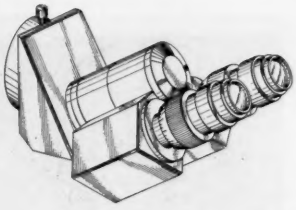
235,682
CONTROL HOUSING FOR A RADIO
David L. Haas, Norwalk, Conn., assignor to General Electric Company
Filed June 25, 1973, Ser. No. 373,404
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



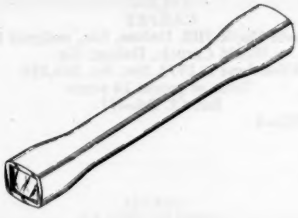
235,683
PORTABLE RADIO
Hiroshi Hirasa, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Aug. 16, 1973, Ser. No. 389,036
Claims priority, application Japan Feb. 16, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



235,684
BINOCULAR MICROSCOPE EYEPIECE
Kurt Michel, Aalen, Germany, assignor to Carl Zeiss-Stiftung, Wurttemberg, Germany
Filed Dec. 19, 1973, Ser. No. 426,314
Claims priority, application Germany June 20, 1973
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



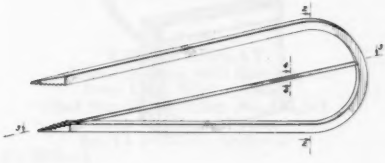
235,685
RIFLESCOPE
M. Gaines Chesnut, Denver, Colo., assignor to Outdoor Sports Industries, Inc., Denver, Colo.
Filed June 24, 1974, Ser. No. 482,209
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



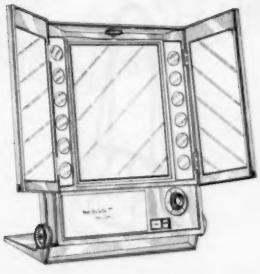
235,686
DISPOSABLE DOUCHE
Stanley Schoenfeld, Pound Ridge, and Jacob Skolnik, New Rochelle, N.Y., assignors to Richardson-Merrell Inc., Wilton, Conn.
Filed Aug. 6, 1973, Ser. No. 385,675
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 Q

235,687
SURGICAL MASK
Marion Bragg, Palatine, Ill., assignor to The Kendall Company, Walpole, Mass.
Continuation-in-part of abandoned design application Ser. No. 453,776, Mar. 22, 1974. This application Aug. 29, 1974, Ser. No. 499,380
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D83—1 K

235,688
SURGICAL SUTURE REMOVER
William Glenn Allen, Jr., 1811 Floyd Ave., Richmond, Va. 23220
Filed Oct. 18, 1973, Ser. No. 407,471
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



235,689
MAKE-UP MIRROR
John L. Benty, Maplewood, N.J., and Dominic De Fano, Palatine, and Robert I. Kallman, Elburn, Ill., assignors to Clairol Incorporated, New York, N.Y.
Filed May 23, 1972, Ser. No. 256,220
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D86—10 H

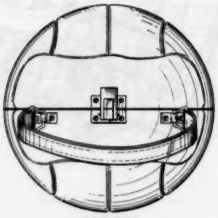


235,690
HANDBAG
Valerie Barad, Gardena, Calif., assignor to Theodor Manufacturing Corp., Gardena, Calif.
Filed June 11, 1973, Ser. No. 368,616
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F

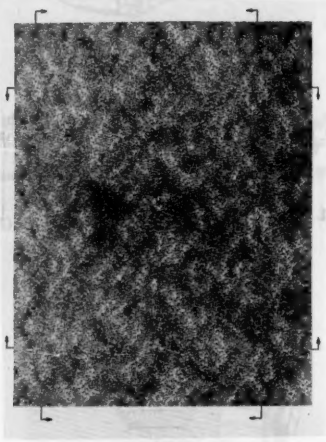
235,691
HANDBAG
Valeria Barad, Gardena, Calif., assignor to Theodor Manufacturing Corp., Gardena, Calif.
Filed May 29, 1973, Ser. No. 364,900
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F

235,692
SHOULDER BAG
James L. Rushing and Linda S. Rushing, both of 3012 NW. 43rd St., Oklahoma City, Okla. 73112
Filed Dec. 6, 1974, Ser. No. 530,216
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—3 F

235,693
HANDBAG
Clarence V. Tibbs, Knoxville, Tenn., assignor to Balls 'n' All, Inc., Knoxville, Tenn.
Filed Mar. 13, 1973, Ser. No. 340,756
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—C

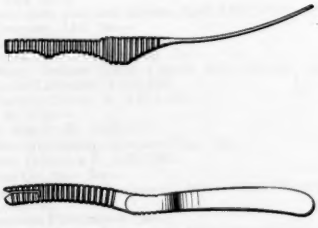


235,694
CARPET
Kenneth Doyle Hill, Dalton, Ga., assignor to World Carpets, Dalton, Ga.
Filed June 1, 1973, Ser. No. 366,186
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D92—4

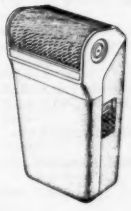


235,695
CARPET
Kenneth Doyle Hill, Dalton, Ga., assignor to World Carpets, Dalton, Ga.
Filed June 1, 1973, Ser. No. 366,170
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D92—4

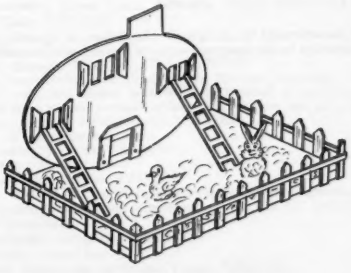
235,696
RAZOR HANDLE
Walter R. Krupski, 375 Main St., Lynnfield, Mass. 01940
Filed Feb. 21, 1973, Ser. No. 334,205
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



235,697
ELECTRIC SHAVER
Yoritaka Ikejima and Takeshi Takagi, Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan
Filed Oct. 26, 1973, Ser. No. 410,054
Claims priority, application Japan Apr. 27, 1973
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



235,698
EASTER DISPLAY
Joan J. Keskes, 9606 Boucher, Otter Lake, Mich. 48464
Filed May 17, 1972, Ser. No. 254,341
Term of patent 14 years
Int. Cl. D11—*05;* D20—*02*
U.S. Cl. D96—2



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1st DAY OF JULY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.R.F. Products, Incorporated: *See*—
Ringer, Kenneth M., 3,893,121.

Aaltonen, Olavi August: *See*—
Nermes, Esko Olavi; Talonen, Timo Tapani; and Aaltonen, Olavi August, 3,892,560.

Abbott Laboratories: *See*—
Banford, John A.; Moyer, Ronald H.; and Mauer, Russell E., 3,892,238.

Abe, Jinnosuke; Watanabe, Tetsuo; Nagata, Akiho; Ando, Takuji; Take, Teruo; Izumi, Rokuro; Noda, Toshiharu; and Matsuura, Kazuo, to Toyo Jozo Kabushiki Kaisha. Antibiotic tuberactinomycin-N and process for production thereof. 3,892,732, Cl. 260-239.30R.

Abe, Kunio: *See*—
Takahashi, Yoshio; Abe, Kunio; and Tanaka, Haruhiko, 3,892,415.

Abercrombie, William F., Jr., to J. M. Huber Corporation. Method for controlling the viscosity of dispersed clay slurries. 3,892,587, Cl. 106-288.00B.

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Ackerman, James H.: *See*—
Nickel, Ardie R.; Rosenberg, Franklin J.; and Ackerman, James H., 3,892,800.

Acree, William M.: *See*—
Simons, Robert W.; and Acree, William M., 3,892,627.

Adair, William A.; and Pollowy, Richard F., to Teledyne, Inc. Drafting board straight edge assembly. 3,892,041, Cl. 33-80.000.

Adams, Herbert J. F.; Blair, Murray R., Jr.; Boyes, Robert N.; Lebeaux, Maxim I.; and Vassallo, Helen G., to Astra Pharmaceutical Products, Inc. Spinal anesthesia using small amount of saxitoxin. 3,892,847, Cl. 424-95.000.

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Gawron, Stanley A., 3,892,672.

Advanced Power Systems: *See*—
Johnson, John W., 3,892,283.

Aerpat A.G.: *See*—
Sheffield, David John; Prosser, Paul Edward; and Charman, Bernard William, 3,892,120.

Agence Nationale de Valorisation de la Recherche "Anvar": *See*—
Montel, Gilbert, 3,893,119.

Agfa-Gevaert Aktiengesellschaft: *See*—
Claes, Frans Henri; Klein, Eberhard; Libeer, Marcel Jan; and Moisar, Erik, 3,892,574.
Winkler, Alfred; Geisslinger, Wolfgang; and Ungnadner, Peter, 3,892,479.
Winkler, Alfred; Engelsmann, Dieter; and Schroder, Rolf, 3,893,139.

Agfa-Gevaert N.V.: *See*—
De Schrijver, Frans Carolus; and Delzenne, Gerard Albert, 3,892,642.
Van Poucke, Raphael Karel; and De Cat, Arthur Henri, 3,892,576.

Ahrens, Karl: *See*—
Kriechbaum, Karl; and Ahrens, Karl, 3,892,151.

Aikoh Company, Ltd.: *See*—
Takashima, Masaru, 3,892,561.

Air Products and Chemicals, Inc.: *See*—
Bechara, Ibrahim Selim; Carroll, Felix Patrick; and Mascioli, Rocco Lawrence, 3,892,687.
Heiberger, Charles A., 3,892,692.

AIRCO, Inc.: *See*—
Kirk, Bradley S., 3,892,659.

Airrigation Engineering Company, Inc.: *See*—
Horne, Frederick F., 3,892,588.

Ajinomoto Co., Inc.: *See*—
Toogoo, Kazushi; Yamagata, Mineo; and Akamatsu, Akira, 3,892,895.

AJM Research Corporation: *See*—
Malavazos, Arthur J., deceased; Malavazos, Gregory A., administrator; and Urdal, Jan, 3,892,355.

Akamatsu, Akira: *See*—
Toogoo; Kazushi; Yamagata, Mineo; and Akamatsu, Akira, 3,892,895.

Akashi, Takahuni: *See*—
Ishizawa, Kazutomo; Akashi, Takahuni; and Otake, Sadao, 3,893,010.

Aki, Osami: *See*—
Ochiai, Michihiko; Aki, Osami; Morimoto, Akira; and Okada, Taiiti, 3,892,737.

Akiyama, Minoru: *See*—
Matsumura, Yasuo; Maruyama, Kunio; Akiyama, Minoru; and Kanetsuki, Katsutoshi, 3,892,719.

Aktiebolaget Svenska Flaktfabriken: *See*—
Goransson, Rolf, 3,892,545.

Aktien-Gesellschaft "Weser": *See*—
Janssen, Hans-Georg, 3,892,195.

Aktiengesellschaft Gebruder Loepfe: *See*—
Eichenberger, Werner, 3,892,492.
Stutz, Hansruedi, 3,892,951.

Akutagawa, Susumo; Kumobayashi, Hidenori; and Komatsu, Akira, to Takasago Perfumery Co., Ltd. Process for producing cycloalkenes. 3,892,817, Cl. 260-666.00A.

Akzona Incorporated: *See*—
van der Burg, Willem Jacob, 3,892,695.

Albert, Albert F.: *See*—
Cotter, John L., 3,893,111.

Albert, Robert Eyer, to du Pont de Nemours, E. I., and Company. Cold water soluble plastic films. 3,892,905, Cl. 428-220.000.

Alderman, Michael L.: *See*—
Redlich, George H.; and Alderman, Michael L., 3,892,523.

Alexander, Howard R.: *See*—
Muhler, Joseph C.; and Alexander, Howard R., 3,892,843.

Alfa-Laval AB: *See*—
Johansson, Bjorn-Olow, 3,892,166.

Alfa Romeo S.p.A.: *See*—
Garcea, Giampaolo, 3,892,071.

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Alinari, Carlo, to Under Sea Industries, Inc. Instrument for indicating the duration and depth of decompression stops in diving. 3,892,131, Cl. 73-432.00R.

Alivoivodich, Miro: *See*—
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.

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Allen, Howard G., to General Electric Company. Gearmotor with removable pinion. 3,892,986, Cl. 310-42.000.

Allen, James Lawson: *See*—
Dwyer, John Robert, Jr.; Karasa, Alvydas Petras; Bell, Jonathan Durand; and Allen, James Lawson, 3,892,359.

Allied Chemical Corporation: *See*—
Lofquist, Robert Alden, 3,892,525.
Lofquist, Robert Alden; and Saunders, Peter Reginald, 3,892,526.
Wortham, Joseph S., 3,892,846.

Allworth, Alfred Alden: *See*—
Cavoretto, James Louis; Allworth, Alfred Alden; and Infante, Carlo, 3,893,036.

Almasi, George S.; and Keefe, George E., to International Business Machines Corporation. Two-phase propagation of cylindrical magnetic domains. 3,893,089, Cl. 340-174.0TF.

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Aloe "99" Incorporated: *See*—
Cobble, Henry H., 3,892,853.

Alps Motorola, Inc.: *See*—
Murakami, Hajime, 3,893,183.

Alvino, William M.; and Frost, Lawrence W., to Westinghouse Electric Corporation. Amide-imide polymers. 3,892,768, Cl. 260-326.00C.

ALZA Corporation: *See*—
Zaffaroni, Alejandro, 3,892,842.

Ambrogio, Cuneo: *See*—
Sala, Sergio; and Ambrogio, Cuneo, 3,892,428.

Amemiya, Youichi: *See*—
Inaba, Seiuemon; Shimizu, Kanryo; Hashimoto, Yoshihiro; Usami, Hiroshi; and Amemiya, Youichi, 3,893,011.

American Air Filter Company, Inc.: *See*—
Scholl, Howard O., 3,892,307.

American Cyanamid Company: *See*—
Barg, William Frederick, Jr., 3,892,841.
Brand, William Wayne; and Schrider, Michael Stanley, 3,892,761.
Cevasco, Albert Anthony, 3,892,972.
Giglia, Robert Domenico, 3,892,472.
Hofmann, Corris Mabelle; Osterberg, Arnold Curtis; Greenblatt, Eugene Newton; and Tedeschi, David Henry, 3,892,772.
Kazan, John, 3,892,801.
Semp, Bernard Albert, 3,892,314.

American Dental Association: *See—*
Mabie, Curtis P., Jr., 3,892,579.
American Funeral Supply Corporation: *See—*
Clayton, Marvin Courtland, 3,892,417.
American Home Products Corporation: *See—*
McKinley, Wayne A.; and Sarantakis, Dimitrios, 3,892,723.
Seilstedt, John H.; and Wolf, Milton, 3,892,746.
Amey, Earle B.: *See—*
Leavenworth, Howard W., Jr.; Amey, Earle B.; Dunning, Beverly W., Jr.; Gabler, Robert C., Jr.; and Goldsmith, Carl E., 3,892,639.
AMF Incorporated: *See—*
Sorenson, Bill W., 3,892,401.
Amiot, Felix. Liquid-cooled reciprocating engines, more particularly marine engines. 3,892,209, Cl. 123-41.290.
AMP Incorporated: *See—*
Bierly, Meade Goodman, 3,892,977.
Dittmann, Larry Eugene; and Lemke, Timothy Allen, 3,892,459.
Glover, Douglas Wade; and Fry, Robert Eden, 3,892,462.
Lockard, Joseph Larue, 3,892,931.
Ampex Corporation: *See—*
Stahler, Alfred F., 3,893,167.
Amsted Industries Incorporated: *See—*
Troy, Walter C.; Novak, James J.; Costello, Richard C.; and Dearth, Raymond J., 3,892,272.
Waller, Gustav M.; and Landmark, Kenneth L., 3,892,093.
Amtsberg, Lester A., to Chicago Pneumatic Tool Company. Reciprocating hydraulic hammer. 3,892,279, Cl. 173-13.000.
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Anderson, John Galloway: *See—*
Smith, John Edward; and Anderson, John Galloway, 3,892,629.
Anderson, Richard T.: *See—*
Andrist, Willard L.; and Anderson, Richard T., 3,892,385.
Anderson, Robert Craig; and Calder, Alain, to Imperial Chemical Industries Limited. Smoking mixtures. 3,892,244, Cl. 131-2.000.
Anderson, Yngve R., to Canadian Structural Clay Association. Means and method for prefabricating and conveying ceramic panels. 3,892,380, Cl. 249-83.000.
Ando, Kunio; and Mukoyama, Ryuzo, to Fuji Photo Optical Co., Ltd. Motor driven camera. 3,893,136, Cl. 354-173.000.
Ando, Momofuku. Method of manufacturing seasoned instant cooking noodles packed in a container. 3,892,874, Cl. 426-303.000.
Ando, Shigeru; Tomishima, Kazunaru; and Nishikawa, Akira, to Mitsubishi Denki Kabushiki Kaisha. Method of writing additional information in read-only memory. 3,892,473, Cl. 350-162.00R.
Ando, Takuji: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Nagata, Akiho; Ando, Takuji; Take, Teruo; Izumi, Rokuro; Noda, Toshiharu; and Matsuura, Kazuo, 3,892,732.
Andriska, Viktor: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Szatala, Odon; Andriska, Viktor; Grega, Erzsebet, nee Toth; Pinter, Zoltan; and Nagy, Sandor, 3,892,747.
Andrist, Willard L.; and Anderson, Richard T., to Owatonna Tool Company. Automotive tool. 3,892,385, Cl. 254-133.00R.
Angello, Paul S., to Westinghouse Electric Corporation. Keyless control mechanism. 3,893,073, Cl. 340-147.0MD.
Antonelli, Attilio, to Nuovo Pignone, S.p.A. Liquefying refrigerant for water desalination with liquefied natural gas and an intermediate energy cycle. 3,892,103, Cl. 62-58.000.
Aquatium, Inc.: *See—*
Huyler, Jerome F., 3,892,199.
Arai, Akihiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electric motor driven automatic film advance. 3,893,142, Cl. 354-204.000.
Arakelov, Mikhail Alexandrovich; Gersamia, Eduard Galaktionovich; Zedgenidze, Tengiz Grigorievich; and Nozadze, Gennady Pavlovich. Method of assembling slotless stator of electrical machine. 3,892,034, Cl. 29-596.000.
Araki, Eijiro; Mori, Mitsuo; and Morishita, Toshio, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Device for compensating changes in roving winding tension in spinning machine. 3,892,064, Cl. 57-96.000.
Arentzen, E. M., to Dresser Industries, Inc. Continuous cutting and gathering apparatus for a continuous mining machine. 3,892,443, Cl. 299-67.000.
Arias Carvajal, Jose Antonio; and Mena Sanchez, Luis-Martin. Two piece cartridge for magnetic tapes. 3,892,727, Cl. 360-132.000.
Armitage, Harry J. Work shaping apparatus. 3,892,090, Cl. 51-101.00R.
Armstrong Cork Company: *See—*
Hazeley, James E., 3,892,170.
Armstrong Machine Works: *See—*
Schlesch, Ronald D., 3,892,256.
Arnold, Richard H.: *See—*
Meador, Richard A.; and Arnold, Richard H., 3,893,021.
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, to Snam Progetti S.p.A. Process for produced stabilized olefin. 3,892,712, Cl. 260-66.000.
Artemenko, Stanislav Arsenievich: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.
Arthur, William E.; Carrell, Terry E.; and Crego, Willard, to United States of America, Army. Radiation detector system using an inorganic scintillator crystal detector with an optical filter for aerial dosemetry. 3,892,971, Cl. 250-361.000.
Arvin Industries, Inc.: *See—*
Hall, Robert P., Jr., 3,893,169.
Asahi Glass Company: *See—*
Tabata, Yoneho; Ukihashi, Hiroshi; and Yamabe, Masaaki, 3,892,641.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Arai, Akihiro, 3,893,142.
Uno, Naoyuki; and Katsuhiko, Namura, 3,893,141.
Asbeck, Heinz. Protective tire and traction chain for tire-equipped service vehicles. 3,892,268, Cl. 152-172.000.
Asbill, Clarence M., Jr. Cigarette machine. 3,892,245, Cl. 131-75.000.
Ascoli, Enzo; Pidoux, Raymond; and Perdrix, Marc, to Paillard S.A. Process and device for writing by ink jet. 3,893,126, Cl. 346-1.000.
Asikainen, Niilo Klaervo, to Oy Tampelle AB. Light mortar for finstabilized projectiles. 3,892,163, Cl. 89-37.00C.
Associated Mills, Inc.: *See—*
Hilger, Ronald O., 3,892,363.
Astra Pharmaceutical Products, Inc.: *See—*
Adams, Herbert J. F.; Blair, Murray R., Jr.; Boyes, Robert N.; Lebeaux, Maxim I.; and Vassallo, Helen G., 3,892,847.
Ateliers de Constructions Electriques de Charlerol, (ACEC): *See—*
Warmont, Georges, 3,892,023.
Atlantic Richfield Company: *See—*
Janssen, Albert T., 3,892,442.
Atlas Copco Aktiebolag: *See—*
Handen, Ebbe Sigfrid Adolfsson; and Ekwall, Carl Gosta Bernhard, 3,892,107.
Atwood & Morrill Co.: *See—*
Prescott, Norman F.; and McKay, Alexander J., 3,892,381.
Auer, Eberhard: *See—*
Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, 3,892,674.
Augustine, Matthew Anthony: *See—*
Difazio, Louis Thomas; and Augustine, Matthew Anthony, 3,892,857.
Austin, Paul Rolland, to University of Delaware. Solvents for and purification of chitin. 3,892,731, Cl. 260-211.00R.
Australian Wire Industries Proprietary Limited: *See—*
Sciffer, Jack Pryor, 3,892,894.
Automatic Druckmaschinenfabrik, Firma: *See—*
Staamann, Otto, 3,892,178.
Avilla, William A.: *See—*
Hall, Howard W.; and Avilla, William A., 3,892,173.
Avon Products, Inc.: *See—*
Cunningham, Andrew J.; and Tuffile, Fred M., 3,892,845.
B E Industries: *See—*
Bieser, Albert H., 3,893,123.
B.F. Goodrich Company, The: *See—*
Taylor, Ray D., 3,892,741.
Babcock & Wilcox Company, The: *See—*
Hoeman, Terry E., 3,892,261.
Jabsen, Felix S., 3,892,027.
Warren, Holland D., 3,892,969.
Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna. Method for preparing stereoregular 1,4-transpolymers of 2-alkyl- butadienes-1,3 or stereoregular 1,4-transcopolymers of 2-alkylbutadienes-1,3 with butadiene-1,3. 3,892,722, Cl. 260-82.100.
Bachmann, Hans, to Intermadox A.G. Contactless potentiometer with automatically controlled light source. 3,892,961, Cl. 250-211.00K.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Pommer, Ernst-Heinrich; Scheuerer, Guenter; Bolz, Gerhard; and Mangold, Dietrich, 3,892,861.
Winterfeldt, Ekkehard, 3,892,754.
Baggs, Burton D., Jr.: *See—*
Smith, Alexander; and Baggs, Burton D., Jr., 3,892,278.
Bagnulo, Luigi. Method for forming conduits having a continuous corrosion-resistant lining. 3,892,032, Cl. 29-455.000.
Baier, Jurgen Georg. Projector and projecting member. 3,892,406, Cl. 273-96.00B.
Bailey, John S.: *See—*
Taggart, Robert B.; Barth, Richard H.; and Bailey, John S., 3,893,173.

Bailey, Philip S.: *See*—
Chang, Yun Ger; and Bailey, Philip S., 3,892,811.

Bain, David. Joint construction for logs and the like. 3,892,097, Cl. 52-233.000.

Baker, Don R.; and Teach, Eugene G., to Stauffer Chemical Company. Bromoacetanilides and their utility as biocides. 3,892,786, Cl. 260-468.00E.

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Baker, Virginia B., executor: *See*—
Baker, Fredrick A., deceased; and Baker, Virginia B., executor, 3,892,230.

Baldauf, Harold C.: *See*—
Horner, John A.; and Baldauf, Harold C., 3,892,002.

Baldwin, Claude M. Fix a fin tool. 3,892,123, Cl. 72-478.000.

Baldwin, John J.; and Novello, Frederick C., to Merck & Co., Inc. Novel substituted 1,2,4-triazoles. 3,892,762, Cl. 260-295.00E.

Ballonoff, Aaron: *See*—
Silzars, Aris; and Ballonoff, Aaron, 3,893,157.

Balser, Martin, to Xonics, Inc. Aircraft vortex detection system. 3,893,060, Cl. 340-1.00R.

Balzers Patent-und Beteiligungs Aktiengesellschaft: *See*—
Ruhe, Jochen; and Beck, August, 3,892,416.

Banford, John A.; Moyer, Ronald H.; and Mauer, Russell E., to Abbott Laboratories. Drug supporting anchor. 3,892,238, Cl. 128-260.000.

Bank Of America National Trust & Savings Association: *See*—
Thorson, Albin W.; and Shultz, Henry D., 3,893,094.

Barakauskas, Edward J.: *See*—
Goedde, Edmund F.; Hoover, Gary D.; and Barakauskas, Edward J., 3,892,194.

Barber-Colman Company: *See*—
Johnson, Stuart J., 3,892,022.

Bardocz, Arpad, to Physik Instrumente (PI) GmbH. Laser beam adjustment apparatus. 3,892,475, Cl. 350-285.000.

Barg, William Frederick, Jr., to American Cyanamid Company. Enhancing the visibility of immunodiffusion precipitin bands in human placental lactogen test. 3,892,841, Cl. 424-12.000.

Barker, Jabus, to General Electric Company. R-F antenna apparatus for generating conical scan pattern. 3,893,124, Cl. 343-768.000.

Barkow, William Henry: *See*—
Morrell, Albert Maxwell; Barkow, William Henry; and Gross, Josef, 3,892,996.

Barratt, William C. Process for producing fibrous cement sheets. 3,892,623, Cl. 162-120.000.

Bartels, Alfred Friedrich Adolf; Pinkerneil, Gunther Fritz August Heinrich; and Kohn, Herbert Dietrich August, to Nordischer Maschinenbau Rud. Baader. Skinning machine for fish fillets. 3,892,010, Cl. 17-62.000.

Barth, Richard H.: *See*—
Taggart, Robert B.; Barth, Richard H.; and Bailey, John S., 3,893,173.

Bartosik, Zbigniew: *See*—
Hennel, Waclaw; Cyrus-Sobolewski, Jan; and Bartosik, Zbigniew, 3,892,535.

BASF Aktiengesellschaft: *See*—
Elser, Wolfgang; and Schmidt, Helmut, 3,892,784.

Bates, David J.: *See*—
Gralenski, Nicholas M.; Wada, George; and Bates, David J., 3,892,989.

Bates, Roger D.: *See*—
Hawley, Jack S.; Bates, Roger D.; and Thacker, Charles P., 3,892,963.

Batka, Heimold: *See*—
Schade, Wolfgang; Krings, Peter; and Batka, Heimold, 3,892,522.

Bauer, Frederick T., to Robertshaw Controls Company. Electrical primary control system for furnaces. 3,892,981, Cl. 307-117.000.

Bauer, Heinrich; Dorner, Karl-Heinz; Eberlin, Helmut; Kaulen, Hans; Pazurek, Werner; Richarz, Heinz; Taubman, Harro J.; and Wolf, Gerhard, to Eisenbau Wyhlen AG; and Vaw Leichtmetall GmbH. Method and apparatus for transporting and storing heavy commodities. 3,892,113, Cl. 72-250.000.

Bauerlen, Hans, to Robert Bosch G.m.b.H. Recording apparatus for electrographic imaging. 3,893,128, Cl. 346-74.0ES.

Baxter Laboratories, Inc.: *See*—
Leonard, Ronald J., 3,892,534.
Thorne, Gale H.; Wood, Orin Lew; and Knudson, Kay L., 3,892,628.

Bayard, Joel: *See*—
Lainez, Lucien; Duiker, Fokke; Bayard, Joel; and Di Campli, Dominique, 3,892,025.

Bayer Aktiengesellschaft: *See*—
Cohnen, Wolfgang; and Peilstocker, Gunter, 3,892,889.
Eichenhofer, Kurt-Wilhelm; and Schliebs, Reinhard, 3,892,805.
Fest, Christa; and Hammann, Ingeborg, 3,892,753.
Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; and Hammann, Ingeborg, 3,892,823.
Scharfe, Gerhard; and Wilhelms, Rolf-Ernst, 3,892,818.
Tamer, Ergun; Hendricks, Udo; and Quaedvlieg, Mathieu, 3,892,527.
Winter, Gerhard; Verbeek, Wolfgang; and Mansmann, Manfred, 3,892,583.

BBC Brown Boveri & Company Limited: *See*—
Iten, Paul D.; and Mastner, Jiri, 3,893,113.

Beall, Glenn Lee: *See*—
Van Amerongen, Edward; Beall, Glenn Lee; Clark, John Charles; and Reilly, Richard Joseph, 3,892,235.

Bechara, Ibrahim Selim; Carroll, Felix Patrick; and Mascioli, Rocco Lawrence, to Air Products and Chemicals, Inc. Quaternary hydroxyalkyl tertiary amine bases as poluyrethane catalysts. 3,892,687, Cl. 260-2.5AC.

Bechly, Fred Lorin; and Young, Jing Jue, to RCA Corporation. Technique for minimizing interference in video recorder reproducer systems. 3,893,168, Cl. 360-25.000.

Bechtel International Corporation: *See*—
Quarm, Thomas A. A., 3,892,559.

Beck, August: *See*—
Ruhe, Jochen; and Beck, August, 3,892,416.

Beck, Roy Z. Tool box tray. 3,892,331, Cl. 220-96.000.

Becker, Lester J., to Lainof, Kate C. Hydraulic control system. 3,892,167, Cl. 91-497.000.

Becker, Robert: *See*—
Wagner, Joseph R.; Miers, Jackson C.; and Becker, Robert, 3,892,877.

Beckman Instruments, Inc.: *See*—
Gilbert, Paul T., 3,892,531.

Beecham Group Limited: *See*—
Billington, Arthur Ernest, 3,892,872.

Bekum Maschinenfabriken GmbH: *See*—
Mehnert, Gottfried; and Koetke, Klaus-Dieter, 3,892,513.

Belfor, Mikhail Gdal Gershovich: *See*—
Paton, Vladimir Evgenievich; Smolyarko, Vladimir Borisovich; Belfor, Mikhail Gdal Gershovich; Pichak, Vladimir Grigorievich; Savich, Igor Mavrikievich; Rybchenkov, Alexandr Grigorievich; Pankov, Vasily Ivanovich; and Ignatushenko, Arkady Anatolievich, 3,892,937.

Belkin, Paul V. Adjustable support. 3,892,204, Cl. 119-103.000.

Bell, Antony G., to Texas Instruments Incorporated. Random access memory shift register system. 3,893,088, Cl. 340-173.00R.

Bell, Harold E., to Raymond Lee Organization, Inc., The, a part interest. Method of making a baby pacifier. 3,892,243, Cl. 128-359.000.

Bell & Howell Company: *See*—
Schmidt, Josef, 3,893,182.

Bell, James E.; and Laczko, Robert P., to ESB Incorporated. Storage battery with single fill valve. 3,892,595, Cl. 136-162.000.

Bell, Jonathan Durand: *See*—
Dwyer, John Robert, Jr.; Karasa, Alvydas Petras; Bell, Jonathan Durand; and Allen, James Lawson, 3,892,359.

Bell Telephone Laboratories, Incorporated: *See*—
Candy, James Charles, 3,893,102.
Casterline, Russell Carson; Krawiec, Zbigniew Apoloniusz; and Peterson, Ralph Broman, 3,892,928.
Coquin, Gerald Allan; Maldonado, Juan Ramon; and Maydan, Dan, 3,892,973.
Duguay, Michel Albert, 3,892,468.
Fuss, Peter Siegfried, 3,892,956.
Smith, Arnold Ray, 3,892,910.
Vachon, Patrick Alban, 3,892,924.
Willhite, Charles C., 3,893,034.

Beloit Corporation: *See*—
Skaugen, Borgeir, 3,892,622.

Bendix Corporation, The: *See*—
Doniger, Jerry, 3,892,373.
Frei, Karl; and Ripley, Gerald E., 3,892,301.
Menzel, Klaus, 3,892,137.

Benjamin, Lawrence; and Saylor, Jay Harold, to Procter & Gamble Company, The. Built detergent composition containing calcium-insensitive detergent and a carbonate-silicate builder. 3,892,680, Cl. 252-532.000.

Benken, William B.: *See*—
Rapisarda, Anthony A.; Schoene, Kenneth F.; and Benken, William B., 3,892,669.

Bennett, John, to Sun Oil Company. Vacuum ice anchor. 3,892,287, Cl. 180-115.000.

Benowitz, Sander, to Combustion Power Company, Inc. Magnetic pulley for removal of non-magnetic pieces from waste material. 3,892,658, Cl. 209-213.000.

Beresnev, Vadim Nikolaevich: *See*—
Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.

Berg, David W.: *See*—
Christensen, Bryan L.; and Berg, David W., 3,892,008.

Berkey Photo, Inc.: *See*—
Weisglass, Louis L., 3,892,482.

Bernard, James A., to General Motors Corporation. Harvesting apparatus for automatic ice maker. 3,892,105, Cl. 62-353.000.

Berndt, Walter; and Lauff, Helmut F., to C. Keller & Co. Device for stacking bricks in layers. 3,892,318, Cl. 214-6.00A.

Berns, Harald, to Henry Morton Unger. Squeegee or like cleaning appliance, particularly for cleaning window panes and floors. 3,892,005, Cl. 15-245.000.

Bertaud, Francois X., to Borg-Warner Corporation. Conveyor lubrication line connection arrangement. 3,892,306, Cl. 198-192.00R.

Best, Howard S.; Bustraan, Daniel J.; and Philippon, Paul H., to Corning Glass Works. Container and method of using same. 3,892,333, Cl. 221-200.000.

Beswick, Geoffrey Ernest, to Imperial Chemical Industries Limited. Manufacture of isocyanates. 3,892,793, Cl. 260-453.00P.

Bethlehem Steel Corporation: *See—*
Kranenberg, Helmut, 3,892,602.

Beunk, Gerrit J.; and van der Ploeg, Arie, to Texas Instruments Incorporated. Sealed thermostatic switch. 3,893,057, Cl. 337-380.000.

Bibeau, Emile L. Golf club cover. 3,892,267, Cl. 150-52.00G.

Bierly, Meade Goodman, to AMP Incorporated. Switchable high voltage power supply. 3,892,977, Cl. 307-77.000.

Biermann, Manfred; Brauer, Bernd; Heidborn, Wolfgang; Monno, Bernd; and Thiessen, Klaus, to VEB Werk fur Fernsehelektronik. Electrodes for liquid crystal components. 3,892,471, Cl. 350-160.0LC.

Bieser, Albert H., to B E Industries. Combination gyro and pendulum weight stabilized platform antenna system. 3,893,123, Cl. 343-706.000.

Billigmeier, James E.; Melby, Allan L.; Peerman, Dwight E.; and Rosesler, Richard R., to General Mills, Inc. Cross-linkable polyamides derived from polymeric fat acids. 3,892,785, Cl. 260-404.500.

Billington, Arthur Ernest, to Beecham Group Limited. Edible colouring materials. 3,892,872, Cl. 426-250.000.

Birkenmeyer, Robert D., to Upjohn Company, The. 1′(Beta-hydroxyethyl)-1′-demethyl clindamycin 2-phosphates. 3,892,729, Cl. 260-210.00R.

Birkenmeyer, Robert D., to Upjohn Company, The. 1′-(β-hydroxyethyl)-1′-demethyl clindamycin 2-acylates. 3,892,730, Cl. 260-210.00R.

Bisbing, Robert H., to Southco, Inc. Method of capturing screw fastener. 3,892,031, Cl. 29-437.000.

Bismuth, Guy: *See—*
Micheron, Francois; and Bismuth, Guy, 3,892,465.

Bjorklund, Fritz Lars Gunnar; and Matzner, Eva, to Telefonaktiebolaget L M Ericsson. Utilizing ion implantation in combination with diffusion techniques. 3,892,596, Cl. 148-1.500.

Black and Decker Manufacturing Company, The: *See—*
Dwyer, John Robert, Jr.; Karasa, Alvydas Petras; Bell, Jonathan Durand; and Allen, James Lawson, 3,892,359.

Black, Sivalls & Bryson, Inc.: *See—*
Ebeling, Harold O.; and Smith, Russell D., 3,892,517.

Blair, Murray R., Jr.: *See—*
Adams, Herbert J. F.; Blair, Murray R., Jr.; Boyes, Robert N.; Lebeaux, Maxim I.; and Vassallo, Helen G., 3,892,847.

Blake, Floyd A., to Martin Marietta Corporation. Direct solar hydroelectric integrated system and concentrating heliostat for same. 3,892,433, Cl. 290-52.000.

Blake, George B.: *See—*
Whitman, Edward C.; and Blake, George B., 3,893,042.

Blatt, Leland F. Variable orifice shock absorber. 3,892,298, Cl. 188-289.000.

Blattner, Karl; and Picard, Roland, to Societe Genevoise d'Instruments de Physique. Marking method and device. 3,892,965, Cl. 250-316.000.

Bloem, Jan; and Goemans, Antonius Hermanus, to U.S. Philips Corporation. Apparatus for uniformly heating monocrystalline wafers. 3,892,940, Cl. 219-10.490.

Bloodworth, David John: *See—*
Clark, Peter Stanley; and Bloodworth, David John, 3,892,611.

Blumenfield, Arthur: *See—*
Kraynak, Joseph Stephen; and Blumenfield, Arthur, 3,892,427.

Boatman, Lawrence T.: *See—*
Swoboda, John J., Jr.; and Boatman, Lawrence T., 3,892,196.

Boeing Company, The: *See—*
Champoux, Louis A.; Hill, Horace E.; and Phillips, Joseph L., 3,892,121.
Lambregts, Antonius A., 3,892,374.
Majeau, Henrie L.; Heckt, Neil W.; and May, Jack L., 3,893,031.

Bohlen, Peter, to Hoffmann-La Roche Inc. Fluorescamine peptide analyzer. 3,892,532, Cl. 23-253.00R.

Boiko, Georgy Alexandrovich: *See—*
Medovar, Boris Izrailevich; Kumysh, Iiya Iosifovich; Boiko, Georgy Alexandrovich; Rabinovich, Volf Iudovich; Sapozhnikov, Alexandr Ivanovich; Marinsky, Georgy Sergeevich; and Kriger, Jury Nikolaevich, 3,892,271.

Boldebuck, Edith M., to General Electric Company. Method for making carboxy free polyamide acid salts derived therefrom. 3,892,716, Cl. 260-78.0TF.

Bolshakova, Tatyana Georgievna: *See—*
Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.

Bolz, Gerhard: *See—*
Pommer, Ernst-Heinrich; Scheuerer, Guenter; Bolz, Gerhard; and Mangold, Dietrich, 3,892,861.

Bonikowski, Zbigniew, to British Insulated Callender's Cables Limited. Observation method and equipment. 3,892,043, Cl. 33-143.00L.

Bonin, Yves; and Robin, Jean, to Rhone-Poulenc, S.A. Polyurethanes with a new catalyst system. 3,892,715, Cl. 260-77.5AB.

Booher, Harold R., to United States of America, Navy. Programmable psychomotor task simulator system. 3,892,053, Cl. 35-22.00R.

Boomgaard, Dirk J.: *See—*
Neuner, James A.; and Boomgaard, Dirk J., 3,893,090.

Booth, Larry H., to Chesapeake and Ohio Railway Company, The. Air hose anti-disconnect. 3,892,431, Cl. 285-79.000.

Borck, Joachim: *See—*
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, 3,892,770.

Bordas, Barna: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Szatala, Odon; Andriska, Viktor; Grega, Erzsebet, nee Toth; Pinter, Zoltan; and Nagy, Sandor, 3,892,747.

Borg, Richard J.; Lai, David Y. F.; Riley, Neil R.; and Wolfe, James R., to California Metallurgical Industries Inc. Method of making cermet powders. 3,892,644, Cl. 204-164.000.

Borg-Warner Corporation: *See—*
Bertaud, Francois X., 3,892,306.

Bose, Ranendra K. Automobile anti-air pollution device. 3,892,070, Cl. 60-279.000.

Boser, Ronald J. Apparatus for making top and bottom blind stitched facing. 3,892,192, Cl. 112-140.000.

Bosselaar, Cornelis Albertus; Klaver, Olof Erik Hans; Verwey, Jan Florus; and Van Santen, Johannes Gerrit, to U.S. Philips Corporation. Semiconductor memory device and field effect transistor suitable for use in the device. 3,893,151, Cl. 357-23.000.

Bossen, Douglas C.; Cordi, Vincent A.; Hsiao, Mu-Yue; Shiffrin, Barry N.; and Glick, Ellis W., to International Business Machines Corporation. Error correction and detection circuit with modular coding unit. 3,893,070, Cl. 340-146.1AL.

Bossen, Douglas C.; Hsiao, Mu-Yue; and Patel, Arvin M., to International Business Machines Corporation. Multi level error correction system for high density memory. 3,893,071, Cl. 340-146.1AL.

Botzenhardt, Leonhard, to Licentia-Patent-Verwaltungs-G.m.b.H. Resistive connecting contact for a silicon semiconductor component. 3,893,160, Cl. 357-71.000.

Boulter, Richard Arnold, to Post Office, The. Signal receivers. 3,892,916, Cl. 178-88.000.

Bouquet, Jean-Claude: *See—*
Kuhn, Karl; and Bouquet, Jean-Claude, 3,892,210.

Bovard & Cie: *See—*
Mironoff, Nicolas, 3,893,013.

Bowman, William W.: *See—*
McBride, Lyle E., Jr.; and Bowman, William W., 3,893,108.

Boyes, Robert N.: *See—*
Adams, Herbert J. F.; Blair, Murray R., Jr.; Boyes, Robert N.; Lebeaux, Maxim I.; and Vassallo, Helen G., 3,892,847.

Braddock, Peter David Michael: *See—*
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 3,892,790.

Braess, Hans-Hermann; and Kronewitter, Rudolf, to Dr. Ing. h.c.F. Porsche, AG. Wheel suspension for motor vehicles. 3,892,284, Cl. 180-73.00D.

Bragole, Robert A., to USM Corporation. Process for treating polymeric surfaces to provide increased adherence to subsequently applied coatings. 3,892,885, Cl. 427-54.000.

Braley, William V.: *See—*
Schroeder, Alfred A., 3,892,335.

Brand, Hans-Dieter: *See—*
Roeser, Helmut; Volker, Herbert; and Brand, Hans-Dieter, 3,892,536.

Brand, William Wayne; and Schrider, Michael Stanley, to American Cyanamid Company. Certain imidodithiocarbonates. 3,892,761, Cl. 260-294.80G.

Brandenburg, Klaus; and Schwake, Jurgen, to U.S. Philips Corporation. Coincidence measuring circuit for indicating time intervals. 3,893,030, Cl. 324-181.000.

Brandon, Bobby C.: *See—*
DePriest, Donald R.; Brandon, Bobby C.; and Buie, Connell M., 3,892,617.

Brauer, Bernd: *See—*
Biermann, Manfred; Brauer, Bernd; Heidborn, Wolfgang; Monno, Bernd; and Thiessen, Klaus, 3,892,471.

Braun, William A.; and Dunn, David S., to Honeywell Information Systems Inc. Transducer positioning system. 3,893,180, Cl. 360-77.000.

Brauning, Gerhard, to Eastman Kodak Company. Exposure control apparatus. 3,893,134, Cl. 354-30.000.

Bray, Derek, to Motorola, Inc. Electronic tuning system for television receivers. 3,893,049, Cl. 334-15.000.

Breece, James Miklos: *See—*
Goodman, Alvin Malcolm; and Breece, James Miklos, 3,892,891.

Bremer, Horst, to Gunther Papenmeier KG, Maschinen-und Apparatebau. Granulating apparatus. 3,892,515, Cl. 425-314.000.

Bresler, Horst, to G.A.O. Gesellschaft fur Automation. Variable locking device. 3,892,111, Cl. 70-358.000.

Breslow, Jeffrey D.; and Jaworski, Eugene, to Marvin Glass & Associates. Doll carrying a marking means, with paint receptacle and accessory having movable marking surface. 3,892,087, Cl. 46-116.000.

Breuer, Hermann: *See—*
Treuner, Uwe D.; and Breuer, Hermann, 3,892,735.

Brier, William Jean: *See—*
Lach, Ronald Louis; and Brier, William Jean, 3,893,097.

British Insulated Callender's Cables Limited: *See—*
Bonikowski, Zbigniew, 3,892,043.

British Leyland UK Limited: *See*—
Gayfer, John Roland, 3,892,362.

British Titan Limited: *See*—
Brook, David Whiteley; and Kay, Peter Dunlop, 3,892,791.

Brock, Alan J.; and Brock, John D., to Repco Research Proprietary Limited. Electrostatic process where the developer is the photosensitive medium. 3,892,566, Cl. 96-1.00C.

Brock, John D.: *See*—
Brock, Alan J.; and Brock, John D., 3,892,566.

Brook, David Whiteley; and Kay, Peter Dunlop, to British Titan Limited. Titanium compounds. 3,892,791, Cl. 260-429.500.

Brouard, Claude Marie Henri Emile: *See*—
Stiot, Jean-Pierre Henri; and Brouard, Claude Marie Henri Emile, 3,892,725.

Brown, Alexander M. Interdigitated sealing closure. 3,892,016, Cl. 24-205.10R.

Brown, Donald L.: *See*—
King, John A.; and Brown, Donald L., 3,893,019.

Brown, Edward Douglas, to Imperial Chemical Industries Limited. Cyclopentane derivatives. 3,892,733, Cl. 260-240.00R.

Brown, Jimmy L. Grass cutting, trimming and edging device. 3,892,037, Cl. 30-276.000.

Brown, Neil L., to United States of America, Navy. Temperature measuring system having sensor time constant compensation. 3,892,281, Cl. 73-362.0AR.

Browning, Charles A.; and Perrigo, Gilbert G., to Northern Illinois Gas Company. Recorder pen. 3,893,130, Cl. 346-140.000.

Brownyer, Nelson R. Brake disc covering structure. 3,892,297, Cl. 188-218.0XL.

Bruening, Ralph G.: *See*—
Algeri, Harvey R.; Bruening, Ralph G.; Sandorf, Robert E.; and Stillwell, Fred A., 3,893,006.

Bruins, Roger C., to Steelcase Inc. Drawer. 3,892,451, Cl. 312-330.000.

Brule' C. E. & E., Inc.: *See*—
Sharpe, Peter S., 3,892,190.

Brundell Och Jonsson AB: *See*—
Puna, Erich, 3,892,266.

Bruni, Mario, to White Farm Equipment Company. Dust protection device for reduction units at the drive wheels of large agricultural machines. 3,892,285, Cl. 180-75.000.

Brust, Otto-Ernst: *See*—
Halasz, Istvan; Brust, Otto-Ernst; and Sebestian, Imrich, 3,892,678.

Bryant, John D., to Texas Instruments Incorporated. Digit mask logic combined with sequentially addressed memory in electronic calculator chip. 3,892,957, Cl. 235-156.000.

Buchel, Engen: *See*—
Canale, Giacomino; and Dessy, Pietro, 3,892,942.

Buchel, Karl Heinz: *See*—
Metzger, Carl; Meiser, Werner; Buchel, Karl Heinz; and Plempel, Manfred, 3,892,764.

Buchi, George H., to Firmenich S.A. Process for the preparation of 2-(hex-3-cis-en-1-yl)-5-methyl-furan. 3,892,782, Cl. 260-346.10R.

Buckman, Carson F.: *See*—
Weatherly, Arden R.; and Buckman, Carson F., 3,892,828.

Budnick, Edward G., to Plains Chemical Development Co. Detergent compositions containing methane diphosphonic acid compounds. 3,892,676, Cl. 252-109.000.

Budworth, Ronald L.; and Van Leer, Richard A., to Transcripts, Inc. Stenographic data recording apparatus and method. 3,892,915, Cl. 178-21.000.

Buehler Ltd.: *See*—
Keith, Marvin W., Jr., 3,892,092.

Bugaut, Andree: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,892,749.

Buie, Connell M.: *See*—
DePriest, Donald R.; Brandon, Bobby C.; and Buie, Connell M., 3,892,617.

Bunker, Anthony John: *See*—
Sampson, Keith George; Jenkins, Victor Frederick; and Bunker, Anthony John, 3,892,714.

Bunker, William M., to General Electric Company. Simulated collimation of computer generated images. 3,892,051, Cl. 35-12.00N.

Burgman, Jerome A.; Hunia, Edward M.; and Neely, Homer E., Jr., to PPG Industries, Inc. Glass fiber compositions. 3,892,581, Cl. 106-50.000.

Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Preparation of crosslinked polymer latex from aqueous emulsion of solvent/polymer solution of precursor latex particle size. 3,892,697, Cl. 260-29.6CM.

Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Process for converting coarse aqueous emulsion into uniform fine emulsion. 3,892,698, Cl. 260-29.6XA.

Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Method of treating stable polymer latex to produce therefrom stable latex having decreased viscosity. 3,892,700, Cl. 260-29.60R.

Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Method of treating aqueous emulsion of solvent/polymer solution of precursor latex particle size to form latex. 3,892,701, Cl. 260-29.60R.

Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Improved process for production of aerosol latex with centrifugal force. 3,892,702, Cl. 260-29.60R.

Burke, Oliver W., Jr., to Exxon Research and Engineering Company. Improved process for converting aqueous emulsion into aerosol of latex of polymer in aqueous/solvent vapor phase. 3,892,703, Cl. 260-29.60R.

Burkowitz, Peter Klaus, to Polygram GmbH. Method and apparatus for monitoring recording level. 3,892,921, Cl. 179-1.0MN.

Burkus, John; Leclerc, Robert G.; and Esposito, Louis V., to Uniroyal, Inc. Cure of polyurethanes with mixed curatives comprising hydroxy tertiary amines. 3,892,713, Cl. 260-75.0NC.

Burlington Industries, Inc.: *See*—
Leach, Jack; and Fash, William G., 3,891,996.

Burnham, John S., to Superior Oil Company, The. Apparatus for countercurrent gas-solid contact. 3,892,551, Cl. 55-390.000.

Burroughs Corporation: *See*—
Glaser, David, 3,893,101.

Bushyhead, Jess C.: *See*—
Kolster, Edward J.; Bushyhead, Jess C.; and Kolster, Harvey L., 3,892,450.

Bustraan, Daniel J.: *See*—
Best, Howard S.; Bustraan, Daniel J.; and Philippon, Paul H., 3,892,333.

Butler, William R. Dispensing device having a rotor for metering a material into a fluid stream. 3,892,336, Cl. 222-193.000.

Buzina, Natalya Anatolievna: *See*—
Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.

Byron Jackson Inc.: *See*—
Wiley, Mark H., 3,892,148.

C. B. F. Systems Inc.: *See*—
Covarrubias, George Salvador, 3,892,253.

C. Keller & Co.: *See*—
Berndt, Walter; and Lauff, Helmut F., 3,892,318.

Cabansag, Edwin. Apparatus for immobilizing infants and small children. 3,892,399, Cl. 269-328.000.

Calder, Alain: *See*—
Anderson, Robert Craig; and Calder, Alain, 3,892,244.

Caldwell, William F., to Huntington Rubber Corporation. Toggle-action fastener. 3,892,434, Cl. 292-247.000.

California Metallurgical Industries Inc.: *See*—
Borg, Richard J.; Lai, David Y. F.; Riley, Neil R.; and Wolfe, James R., 3,892,644.

Cametti, George M.: *See*—
Richards, Edward L.; and Cametti, George M., 3,892,934.

Campbell, Jeptha E.; and Gilchrist, James E., to United States of America, Health, Education and Welfare. Method and apparatus for plating and counting aerobic bacteria. 3,892,632, Cl. 195-103.50R.

Canadian Structural Clay Association: *See*—
Anderson, Yngve R., 3,892,380.

Canale, Giacomino; and Dessy, Pietro, to Buchel, Engen. Semi-automatic spot-welding apparatus. 3,892,942, Cl. 219-127.000.

Candy, James Charles, to Bell Telephone Laboratories, Incorporated. Digital-to-analog converter using differently decoded bit groups. 3,893,102, Cl. 340-347.0DA.

Canon Kabushiki Kaisha: *See*—
Taguchi, Tatsuya; and Iura, Yukio, 3,893,143.

Canron, Inc.: *See*—
von Beckmann, Helmuth, 3,892,183.

Cantalupi, Lewis: *See*—
Tucci, Domenick; and Cantalupi, Lewis, 3,893,096.

Cap, Antonin: *See*—
Doudlebsky, Cubor; Jaros, Frantisek; Ferkl, Frantisek; Cap, Antonin; Ripka, Josef; and Junek, Jan, 3,892,063.

Carborundum Company, The: *See*—
Monaghan, George J., 3,892,396.

Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., to General Electric Company. Method for fabricating foreign object damage protection for rotar blades. 3,892,612, Cl. 156-150.000.

Carlton & United Breweries Limited: *See*—
Mitchell, William, 3,892,808.

Carrell, Terry E.: *See*—
Arthur, William E.; Carrell, Terry E.; and Crego, Willard, 3,892,971.

Carroll, Felix Patrick: *See*—
Bechara, Ibrahim Selim; Carroll, Felix Patrick; and Mascioli, Rocco Lawrence, 3,892,687.

Carroll, James J., to Warner-Lambert Company. Diagnostic reagents used for the determination of gamma-glutamyl transpeptidase in biological fluids. 3,892,631, Cl. 195-99.000.

Carroll, John T.; and Harris, Nathan G., to Carroll, John T. Lance tip. 3,892,393, Cl. 266-34.00L.

Castegnier, Adrien. Printing method and system by gelatin coagulation. 3,892,645, Cl. 204-180.00R.

Casterline, Russell Carson; Krawiec, Zbigniew Apoloniusz; and Peterson, Ralph Broman, to Bell Telephone Laboratories, Incorporated. Switching system equipped with line verification apparatus. 3,892,928, Cl. 179-175.20R.

Caterpillar Tractor Co.: *See*—
Miller, Kenneth J.; Merritt, Paul H.; and Fuller, Francis W., 3,892,119.

Cavis-Cavetti Isolati S.p.A.: *See*—
Codrino, Giuseppe, 3,892,911.

Cavoretto, James Louis; Allworth, Alfred Alden; and Infante, Carlo, to Tektronix, Inc. Precision function generator. 3,893,036, Cl. 328-185.000.

CBF Systems Inc.: *See—*
Covarrubias, George Salvador; and Slater, Ernest Charles, 3,892,182.

Cebal GP and Societe de Traitements Electrolytiques et Electrothermiques: *See—*
Doucherain, Jacques, 3,892,505.

Celek, John Edward, to GTE Automatic Electric Laboratories Incorporated. Automatic master clock track writer. 3,893,172, Cl. 360-51.000.

Cesca, Sebastiano: *See—*
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, 3,892,712.

Cevasco, Albert Anthony, to American Cyanamid Company. Method of producing a luminescent surface containing substituted sulfonamido and carboxamido phenyl quinazolones. 3,892,972, Cl. 250-458.000.

Champoux, Louis A.; Hill, Horace E.; and Phillips, Joseph L., to Boeing Company, The. Apparatus for cold-working holes. 3,892,121, Cl. 72-393.000.

Chang, Yun Ger; and Bailey, Philip S., to Reichhold Chemicals, Inc. Organic peroxides and method therefor. 3,892,811, Cl. 260-593.00R.

Chappelow, Ronald E.; Doney, Donald A.; Doulin, Joseph; Lin, Paul T.; and Schiavone, Frank A., to International Business Machines Corporation. Method for forming silicon conductive layers utilizing differential etching rates. 3,892,606, Cl. 148-174.000.

Charles, Inc.: *See—*
Schneider, Charles, 3,892,001.

Charles, Richard J.: *See—*
Smeggil, John G.; and Charles, Richard J., 3,892,599.
Smeggil, John G.; and Charles, Richard J., 3,892,600.
Smeggil, John G.; and Charles, Richard J., 3,892,601.

Charlesby, Arthur; Fydelor, Peter John; and Morris, Adele Patricia, to National Research Development Corporation. Process of making a self contained electrode separator for primary and secondary electrolytic cells. 3,892,594, Cl. 136-148.000.

Charman, Bernard William: *See—*
Sheffield, David John; Prosser, Paul Edward; and Charman, Bernard William, 3,892,120.

Cheavens, Thomas H.: *See—*
Montgomery, Stewart R.; and Cheavens, Thomas H., 3,892,781.

Chesapeake and Ohio Railway Company, The: *See—*
Booth, Larry H., 3,892,431.

Chesluk, Ralph P.: *See—*
White, James A.; Chesluk, Ralph P.; and Platte, Howard J., 3,892,670.

Chevron Research Company: *See—*
Hickson, Donald A., 3,892,655.
Kobzina, John W., 3,892,775.
Lindquist, Robert H., 3,892,270.
Senger, John F., 3,892,218.
Shigeto, Suzuki, 3,892,813.
Woo, Gar Lok, 3,892,686.

Chicago Pneumatic Tool Company: *See—*
Amtsberg, Lester A., 3,892,279.

Chiron, Bernard; and Fache, Michel, to Societe Lignes Telegraphiques et Telephoniques. Simplified moving target detector. 3,893,109, Cl. 343-5.0PD.

Chiu, Ying C., to Shell Oil Company. Digested alkaline tall oil pitch soap composition. 3,892,668, Cl. 252-8.55D.

Chiyoda Kako Kensetsu Kabushiki Kaisha: *See—*
Iwagami, Masao; and Miyashita, Satoshi, 3,892,332.

Christensen, Bryan L.; and Berg, David W., to Tennant Company. Vented double skirt system. 3,892,008, Cl. 15-368.000.

Ciba-Geigy Corporation: *See—*
Drabek, Jozef, 3,892,854.
Frey, Christoph, 3,892,750.
Pass, Herbert A.; Gerber, Hans-Rudolf; and Green, David Howard, 3,892,555.
Porret, Daniel; and Habermeier, Jurgen, 3,892,765.

Ciccarelli, Roger N.; and Ims, Dale R., to Xerox Corporation. Electrostatically deformable materials. 3,892,567, Cl. 96-1.100.

Cilento, Rudolfo: *See—*
Hill, John Anthony; and Cilento, Rudolfo, 3,892,856.

Cinva S.A.: *See—*
Hernandez Garcia, Maria Cruz, 3,892,507.

Cioccolani, Arnaldo, to Kuhlmann, Ugine. Producing monocrystalline bodies by the verneuil method. 3,892,540, Cl. 23-301.0SP.

Cirulis, Uldis; and Zacharias, Ellis M., Jr., to Nusonics, Inc. Oil detection system. 3,892,127, Cl. 73-61.10R.

Cities Service Company: *See—*
Setterstrom, Carl A., 3,892,690.

Claes, Frans Henri; Klein, Eberhard; Libeer, Marcel Jan; and Moisar, Erik, to Agfa-Gevaert Aktiengesellschaft. Controlled reduction of silver halide grains formed during precipitation. 3,892,574, Cl. 96-107.000.

Clark, John Charles: *See—*
Van Amerongen, Edward; Beall, Glenn Lee; Clark, John Charles; and Reilly, Richard Joseph, 3,892,235.

Clark, Kenneth M., to Deutsch Company Electronic Components Division, The. Coupling for electrical connector or the like. 3,892,458, Cl. 339-90.00R.

Clark, Patrick: *See—*
Pacheco, Francisco, 3,892,653.

Clark, Peter Stanley; and Bloodworth, David John, to Foseco International Limited. Ingot moulds. 3,892,611, Cl. 156-71.000.

Clarke, Warwick Kingston; Kenyon, Ronald Wynford; and Robinson, David, to Imperial Chemical Industries Limited. Coating compositions. 3,892,675, Cl. 252-301.30W.

Claudius Peters AG: *See—*
Kayatz, Karl-Heinz, 3,892,044.

Clayton, Marvin Courtland, to American Funeral Supply Corporation. Gasket for sealing a casket. 3,892,417, Cl. 277-207.00R.

Clevenger, James T., Jr.; and Snyder, Gary C., to Sperry Rand Corporation. Fine speed control for a vehicle. 3,892,286, Cl. 180-77.00R.

Clifford, Peter J., to Raytheon Company. Speed measurement system. 3,893,076, Cl. 340-3.00D.

Closson, Addison W., Jr. Textured shoe stiffener blank. 3,892,078, Cl. 36-68.000.

Closure Industries, Inc.: *See—*
Maguire, Daniel J., 3,892,325.

Coal Industry (Patents) Limited: *See—*
Cooke, Michael Jonathan, 3,892,046.
Kenn, Robert Charles; and Tate, David Arthur, 3,892,184.

Cobble, Henry H., to Aloe "99" Incorporated. Stabilized aloe vera gel and preparation of same. 3,892,853, Cl. 424-195.000.

Cobo Barrachina, Gonzalo, to Laboratorios Berenguer Beneyto S.A. Quinidine polymanuronate. 3,892,728, Cl. 260-209.00R.

Codrino, Giuseppe, to Cavis-Cavetti Isolati S.p.A. Junction box for motor vehicle electrical systems. 3,892,911, Cl. 174-59.000.

Coffey, Donald E.; Harrington, Robert E.; and Felton, Jeffrey L., to NCR Corporation. Replaceable currency or bill holder for a till tray. 3,892,309, Cl. 206-74.000.

Cognitronics Corporation: *See—*
Shepard, David H.; and Gushue, Edward J., 3,893,079.

Cohen, Marvin: *See—*
Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,892,739.

Cohnen, Wolfgang; and Peilstocker, Gunter, to Bayer Aktiengesellschaft. Process for stabilizing moldings of high molecular weight thermo-plastic polycarbonates. 3,892,889, Cl. 117-33.300.

Cole, Edward N., to General Motors Corporation. Quick heat manifold. 3,892,213, Cl. 123-122.00H.

Coleman, William H.: *See—*
Miller, Lewis J.; and Coleman, William H., 3,892,500.

Combustion Equipment Associates Inc.: *See—*
Lyshkow, Norman A., 3,892,549.

Combustion Power Company, Inc.: *See—*
Benowitz, Sander, 3,892,658.

Commissariat a l'Energie Atomique: *See—*
Roubeau, Pierre, 3,892,106.

Compagnie Electro-Mecanique: *See—*
Gardey, Robert, 3,892,548.

Compagnie Generale d'Electricite: *See—*
Godard, Bruno; Lacour, Bernard; and Michon, Maurice, 3,893,046.

Compton, William A.; Nachman, Joseph F.; and Seegall, Manfred I., to International Harvester Company. Sintered NO_x reduction catalysts. 3,892,836, Cl. 423-213.200.

Conco Inc.: *See—*
Faletti, Vincent R., Jr., 3,892,324.

Conradi, Eugene P.: *See—*
DePuydt, Frank A.; and Conradi, Eugene P., 3,892,296.

Consolidated Natural Gas Service Co., Inc.: *See—*
Punwani, Dharamvir; Massey, Lester G.; and Tarman, Paul B., 3,892,682.

Consolidation Coal Company: *See—*
Jamison, Will B., 3,892,100.

Constable, Geoffrey Ernest Patrick, to Smiths Industries Limited. Access- or trnansaction-control. 3,892,948, Cl. 340-149.00R.

Construction Materials Division, General Electric Company: *See—*
Mees, Robert D.; Mittermaier, Armin F.; and Wilcox, Albert F., 3,892,115.

Contastin, Andre, to N. V. Bekaert S.A. Device and method for injecting liquids into a mixing head. 3,892,389, Cl. 259-8.000.

Continental Can Company, Inc.: *See—*
Weatherly, Arden R.; and Buckman, Carson F., 3,892,828.

Control Data Corp.: *See—*
Robbins, Douglas Alan, 3,893,190.

Cook Electric Company: *See—*
Shylo, Paul, 3,892,929.

Cooke, Michael Jonathan, to Coal Industry (Patents) Limited. Fluidised bed apparatus. 3,892,046, Cl. 34-57.00A.

Cooper, Ned. High fructose corn syrup jellies. 3,892,871, Cl. 426-573.000.

Coppen, Peter J., to Hughes Aircraft Company. Production of mis integrated devices with high inversion voltage to threshold voltage ratios. 3,892,609, Cl. 148-188.000.

Coquin, Gerald Allan; Maldonado, Juan Ramon; and Maydan, Dan, to Bell Telephone Laboratories, Incorporated. Mask structure for X-ray lithography. 3,892,973, Cl. 250-505.000.

Corbin, Joseph G. Helicopter hook-up and static electricity grounding device. 3,893,005, Cl. 317-2.00E.

Cordi, Vincent A.: *See—*
Bossen, Douglas C.; Cordi, Vincent A.; Hsiao, Mu-Yue; Shiffrin, Barry N.; and Glick, Ellis W., 3,893,070.

Corning Glass Works: *See—*
Best, Howard S.; Bustraan, Daniel J.; and Philippon, Paul H., 3,892,333.
Gulati, Suresh T.; Hagy, Henry E.; and McCartney, John S., 3,892,537.
Halaby, Sami A.; Kenny, Neal S.; and Murphy, James A., 3,892,888.
Levine, Stuart A.; and Potts, Robert S., 3,892,652.
Messing, Ralph A., 3,892,580.
Rittler, Hermann L., 3,892,897.
Salisbury, Kenneth R.; and Settzo, Robert J., 3,892,651.
Corompt, Antoine, to Marrel, Bennes. Container-handling device for a self-loading vehicle. 3,892,323, Cl. 214-505.000.
Corporacion de Fomento de la Produccion: *See—*
Sfeir, Alberto, 3,892,875.
Corrado, Joseph M.: *See—*
Reines, Jose; Platt, Eric G.; White, Stanley E.; Corrado, Joseph M.; and Wawryszyn, Askold W., 3,893,024.
Corse, Louis. Method and device for regulating the tension and length of a sheet of material. 3,892,344, Cl. 226-44.000.
Costello, Richard C.: *See—*
Troy, Walter C.; Novak, James J.; Costello, Richard C.; and Dearth, Raymond J., 3,892,272.
Coton, William Henry, to Dunlop Limited. Vehicle jack. 3,892,132, Cl. 73-457.000.
Cotter, John L., to Albert, Albert F. System and method for remote monitoring of animal temperature. 3,893,111, Cl. 343-6.50R.
Cotton, Incorporated: *See—*
Swidler, Ronald; Sanderson, William A.; and Mueller, William A., 3,892,906.
Coulstring, Robert N., to Triangle Engineering, Inc. Weld coupon sample cutter. 3,892,089, Cl. 51-34.00D.
Coursin, David B.; and Marmarou, Anthony. System for stimulation and recording of neurophysiologic data. 3,892,227, Cl. 128-2.10B.
Couzens, Roy George Swain: *See—*
Trueman, Frederick Ranson; Couzens, Roy George Swain; and Islip, Brian Henry, 3,892,338.
Covarrubias, George Salvador; and Slater, Ernest Charles, to CBF Systems Inc. Squib control circuit. 3,892,182, Cl. 102-70.20R.
Covarrubias, George Salvador, to C. B. F. Systems Inc. Shear valve with frangible fitting. 3,892,253, Cl. 137-68.000.
Crawford, Joseph H.: *See—*
Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., 3,892,612.
Crawford, Lloyd B., to Crawfords Foods Ltd. Brooding and rearing of poultry. 3,892,201, Cl. 119-17.000.
Crawfords Foods Ltd.: *See—*
Crawford, Lloyd B., 3,892,201.
Crego, Willard: *See—*
Arthur, William E.; Carrell, Terry E.; and Crego, Willard, 3,892,971.
Crites, Robert G., to General Tire & Rubber Company, The. Index means for tire-building apparatus. 3,892,616, Cl. 156-352.000.
Cronenberger, Michel; Laurent, Serge; and Mallet, Maurice, to Rhone-Poulenc, S.A. Fluidisable powder based on a heat-stable bis-imide resin. 3,892,708, Cl. 260-37.00N.
Crosfield Electronics Limited: *See—*
Pugsley, Peter C., 3,893,166.
Crowther, Alan Lewis; and Spencer, Christopher Buxton, to Imperial Chemical Industries Limited. Production of maleic anhydride by catalytic vapor phase oxidation of glutaric acid or anhydride. 3,892,780, Cl. 260-346.800.
CRS Industries, Inc.: *See—*
Haupt, Hans O., 3,892,544.
Cullen, Geoffrey Victor: *See—*
Siviour, Neil Graham; Pearson, Grant Marshall; and Cullen, Geoffrey Victor, 3,892,661.
Cunningham, Andrew J.; and Tuffile, Fred M., to Avon Products, Inc. Hair shade adjuster. 3,892,845, Cl. 424-62.000.
Cuomo, Jerome J.; and Molzen, Walter W., Jr., to International Business Machines Corporation. Chemical sputtering purification process. 3,892,650, Cl. 204-192.000.
Curran, Jeremiah M. Fire protection system. 3,892,277, Cl. 169-16.000.
Currie, Grover C.; and Doll, Brendan L. Slitting roll. 3,892,157, Cl. 83-672.000.
Curtin, John J. Method and apparatus for facilitating testing the liquid absorptivity of soil. 3,892,126, Cl. 73-38.000.
Cyrus-Sobolewski, Jan: *See—*
Hennel, Waclaw; Cyrus-Sobolewski, Jan; and Bartosik, Zbigniew, 3,892,535.
Dahlmann, Julius; and Volter, Gunter, to Opti-Holding AG. Slide-fastener stringer half with woven-in coupling element and method of making same. 3,892,262, Cl. 139-384.00B.
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, to Merck Patent Gesellschaft mit beschrankter Haftung. Phenoxyacetic acid derivatives and process for the preparation thereof. 3,892,770, Cl. 260-326.100.
Dai Nippon Toryo Co., Ltd.: *See—*
Masujima, Kiyohiko; Kotera, Noboru; and Hitomi, Teiichi, 3,892,520.
Daicel Ltd.: *See—*
Shima, Keizo; and Ishihara, Tetsuo, 3,892,900.
Daily, Thomas Edward, to Fedders Corporation. Dishrack adjustment. 3,892,453, Cl. 312-351.000.
Daimler-Benz Aktiengesellschaft: *See—*
Dobler, Helmut, 3,892,028.
Gotz, Hans, 3,892,439.
Saufferer, Helmut, 3,892,483.
Dalle, Jean Paul, to Omnium de Prospective Industrielle, S.A. Process for dyeing cellulosic materials. 3,892,521, Cl. 8-82.000.
Dancy, Julian H., to Texaco Inc. Method for reducing the strength of electrostatic fields in an oil tanker. 3,893,003, Cl. 317-2.00R.
Dancy, Julian H., to Texaco Inc. Apparatus for reducing the strength of electrostatic fields in an oil tanker. 3,893,004, Cl. 317-2.00R.
Danfoss A/S: *See—*
Abildtrup, Jorgen, 3,892,840.
Jensen, Arne, 3,893,192.
Daniels, Gerald C.: *See—*
Stout, Daniel W., 3,892,662.
Danis, Louis J., to Eaton Corporation. Composite article and method of making same. 3,892,216, Cl. 123-191.00S.
Dann, Fred M.; and Reigel, James. Projection forming of three-dimensional metal objects. 3,892,506, Cl. 425-78.000.
D'Antonio, Renato A.; and Marton, Alejandro B., to International Data Sciences, Inc. Error correction system. 3,893,072, Cl. 340-146.1BA.
Darbo, Rolf E. Folding combined broiler, oven and stove. 3,892,222, Cl. 126-9.00R.
Dart Industries, Inc.: *See—*
Kraynak, Joseph Stephen; and Blumenfield, Arthur, 3,892,427.
Data Royal, Incorporated: *See—*
Stein, Charles W., 3,893,100.
Datacq Systems Corporation: *See—*
Higgins, Leonard James, 3,892,305.
Dautzenberg, Frits M.: *See—*
Naber, Jaap E.; and Dautzenberg, Frits M., 3,892,677.
Davidson, Edmund Benjamin: *See—*
Kaplan, Michael; and Davidson, Edmund Benjamin, 3,893,127.
Davidson, Gordon M.: *See—*
Hayden, Rodney; and Davidson, Gordon M., 3,893,194.
Davy-Ashmore Aktiengesellschaft: *See—*
Heeg, Rudolf; and Striebich, Alfred, 3,892,798.
Dayton-Walther Corporation: *See—*
Phillips, Charles Edward, Jr.; and Wells, Thomas Robert, 3,892,141.
De Laval Separator Company, The: *See—*
Hakala, Reynold M., 3,892,172.
Dearth, Raymond J.: *See—*
Troy, Walter C.; Novak, James J.; Costello, Richard C.; and Dearth, Raymond J., 3,892,272.
De Bellomayre, Michel. Motor operated telescopic antenna for vehicles. 3,893,125, Cl. 343-903.000.
De Cat, Arthur Henri: *See—*
Van Poucke, Raphael Karel; and De Cat, Arthur Henri, 3,892,576.
Decatox, GmbH: *See—*
Roeser, Helmut; Volker, Herbert; and Brand, Hans-Dieter, 3,892,536.
Dedona, Francis A.: *See—*
Farra.., David A.; and Dedona, Francis A., 3,892,511.
Deering Milliken Research Corporation: *See—*
Klein, Norman E.; and King, Herbert R., 3,892,109.
Defosse, Georges Jean-Pierre Hubert, to Elphiac. System for adjusting the position of a coil. 3,892,938, Cl. 219-10.790.
DeJong, Dennis E. Alarm device for indicating the removal of a fire extinguisher. 3,893,095, Cl. 340-272.000.
Delmar Chemicals Limited: *See—*
Podesva, Ctirad; Kohan, Geza; and Scott, William T., 3,892,802.
Delzenne, Gerard Albert: *See—*
De Schrijver, Frans Carolus; and Delzenne, Gerard Albert, 3,892,642.
Demetron Gesellschaft fur Elecktronik-Werkstoffe mbH: *See—*
Lutz, Klaus; and Golla, Manfred, 3,892,557.
Denki Onkyo Company, Ltd.: *See—*
Toyoda, Moriaki, 3,893,179.
De Pierre, Vincent; and Gurney, Ferdinand J., to United States of America, Air Force. Method of fabricating a billet from metal preforms and metal powder. 3,892,030, Cl. 29-420.000.
DePriest, Donald R.; Brandon, Bobby C.; and Buie, Connell M., to Humboldt Products Corporation. Apparatus, process and product. 3,892,617, Cl. 156-353.000.
DePuydt, Frank A.; and Conradi, Eugene P., to Dico Company, Inc. Trailer hitch and brake actuator assembly. 3,892,296, Cl. 188-112.000.
De Schrijver, Frans Carolus; and Delzenne, Gerard Albert, to Agfa-Gevaert N.V. Photo-cycloaddition polymerization of bis-anthracene. 3,892,642, Cl. 204-159.110.
Desourdis, Robert I. Thin base self-tracking recording tape. 3,893,181, Cl. 360-84.000.
Dessy, Pietro: *See—*
Canale, Giacomino; and Dessy, Pietro, 3,892,942.
Detch, Lewis; and Detch, Olive A. Locking means for double pin fluorescent lamps. 3,892,457, Cl. 339-54.000.
Detch, Olive A.: *See—*
Detch, Lewis; and Detch, Olive A., 3,892,457.
Deuber, John M.: *See—*
Stevens, Peter; and Deuber, John M., 3,892,638.
Deutsch Company Electronic Components Division, The: *See—*
Clark, Kenneth M., 3,892,458.
Dever, James L.: *See—*
Golborn, Peter; and Dever, James L., 3,892,578.

Diamond, Julius; and Tsuei, Ching Tan, to William H. Rorer, Inc. Naphthylalkanoic acids and their derivatives. 3,892,803, Cl. 260-559.00R.

Diamond, Julius; and Douglas, George Henry, to William H. Rorer, Inc. Tetrahydronaphthylalkanoic acids and their derivatives. 3,892,804, Cl. 260-559.00R.

Di Campli, Dominique: *See*—
Lainez, Lucien; Duiker, Fokke; Bayard, Joel; and Di Campli, Dominique, 3,892,025.

Dico Company, Inc.: *See*—
DePuydt, Frank A.; and Conradi, Eugene P., 3,892,296.

Diehl, Alan V. Transfer molding apparatus with resilient pad to distribute molding pressure. 3,892,512, Cl. 425-251.000.

Diehl, Francis Louvaine: *See*—
Edwards, James Byrd; and Diehl, Francis Louvaine, 3,892,681.

Dieter Haubold Industrielle Nagelgerate: *See*—
Lange, Wilfried, 3,892,313.

Difazio, Louis Thomas; and Augustine, Matthew Anthony, to E. R. Squibb & Sons, Inc. Steroid formulation. 3,892,857, Cl. 424-241.000.

Digital Equipment Corporation: *See*—
Kotok, Alan; Kent, Allan R.; and Gross, David A., 3,893,084.

Dill, Floyd E., to Halliburton Company. Retrievable self-decentralized hydra-jet tool. 3,892,274, Cl. 166-222.000.

dit Dalmy, Max Hercovici. Load-carrying push-carriage. 3,892,429, Cl. 280-36.00C.

Dittmann, Larry Eugene; and Lemke, Timothy Allen, to AMP Incorporated. Open barrel terminal and method for terminating an electrical wire therein. 3,892,459, Cl. 339-95.00R.

Djerassi, Isaac. Apparatus for filtration-leukopheresis for separation and concentration of human granulocytes. 3,892,236, Cl. 128-214.00R.

Dobler, Helmut, to Daimler-Benz Aktiengesellschaft. Method for producing a housing casing for a rotary piston internal combustion engine. 3,892,028, Cl. 29-156.4WL.

Dobson, Christopher David. Enclosures for vacuum coating. 3,892,198, Cl. 118-49.000.

Dr. Ing. h.c.F. Porsche, AG: *See*—
Braess, Hans-Hermann; and Kronewitter, Rudolf, 3,892,284.

Dodson, George Bertram, III, to RCA Corporation. Circuit for determining the time of transitions in an alternating signal. 3,892,949, Cl. 235-61.11E.

Dodson, George Bertram, III, to RCA Corporation. Average value crossover detector. 3,892,950, Cl. 235-61.11E.

Doherty, Kenneth W.: *See*—
Winget, Clifford L.; Doherty, Kenneth W.; and Wirsen, Carl O., 3,892,130.

Doll, Brendan L.: *See*—
Currie, Grover C.; and Doll, Brendan L., 3,892,157.

Domhan, Gerold. Breech and lock mechanism for single-shot or multiple shot repeating hunting rifles. 3,892,082, Cl. 42-11.000.

Doney, Donald A.: *See*—
Chappelow, Ronald E.; Doney, Donald A.; Doulin, Joseph; Lin, Paul T.; and Schiavone, Frank A., 3,892,606.

Doniger, Jerry, to Bendix Corporation, The. Integrated glide path/flare automatic flight control system. 3,892,373, Cl. 244-77.00A.

Donnelly Mirrors, Inc.: *See*—
Strengholt, Roy D., 3,892,947.

Dorner, Karl-Heinz: *See*—
Bauer, Heinrich; Dorner, Karl-Heinz; Eberlin, Helmut; Kaulen, Hans; Pazurek, Werner; Richarz, Heinz; Taubman, Harro J.; and Wolf, Gerhard, 3,892,113.

Doucherain, Jacques, to Cebal GP and Societe de Traitements Electrolytiques et Electrothermiques; and Electrolytiques et Electrothermiques. Means for heating a mold. 3,892,505, Cl. 425-41.000.

Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Cap, Antonin; Ripka, Josef; and Junek, Jan, to Vyzkumny Ustav Bavlnarsky. Spinning machine construction. 3,892,063, Cl. 57-56.000.

Douglas, George Henry: *See*—
Diamond, Julius; and Douglas, George Henry, 3,892,804.

Doulin, Joseph: *See*—
Chappelow, Ronald E.; Doney, Donald A.; Doulin, Joseph; Lin, Paul T.; and Schiavone, Frank A., 3,892,606.

Dow Chemical Company, The: *See*—
Goralski, Christian T., 3,892,743.
Najvar, Daniel J., 3,892,819.
Olstowski, Franciszek, 3,892,705.

Dowa Co., Ltd.: *See*—
Miyahara, Kingo, 3,892,518.

Dowbenko, Rostyslaw, to PPG Industries, Inc. Method of coating surfaces with high solids thermosetting beta-keto ester coating compositions and the resulting coated article. 3,892,903, Cl. 428-460.000.

Dowell, Frederick Sidney, to Dunlop Limited. Disc brakes. 3,892,293, Cl. 188-71.500.

Downes, Thomas. Domestic cleaning apparatus. 3,892,004, Cl. 15-102.000.

Drabek, Jozef, to Ciba-Geigy Corporation. Control of pests with o,s-dialkyl-s-(4-oxa-1,2,3-benzatriazinyl)-dithiaphosphates. 3,892,854, Cl. 424-200.000.

Drake, David L., to United States of America, Navy. Device for conversion and display of radar returns. 3,893,110, Cl. 343-5.0EM.

Drennhaus, Alfons, to International Harvester Company. Scraper and digger attachment for a tractor loader. 3,892,322, Cl. 214-131.00A.

Dresner, Thomas L., to Westinghouse Electric Corp. Holding arrangement for a main valve plug and a pilot valve plug. 3,892,382, Cl. 251-28.000.

Dresser Industries, Inc.: *See*—
Arentzen, E. M., 3,892,443.

Dube, Jacques: *See*—
Allais, Andre; Meier, Jean; and Dube, Jacques, 3,892,773.

Dubois, Jean-Claude, to U.S. Philips Corporation. Semiconductor device having an electroluminescent diode. 3,893,150, Cl. 357-17.000.

Dudley, Harold A.: *See*—
Dudley, Richard J.; and Dudley, Harold A., 3,892,440.

Dudley, Richard J.; and Dudley, Harold A., to S. E. Hyman Company. Automobile seat cover. 3,892,440, Cl. 297-229.000.

Dues, Joseph J.: *See*—
Yost, Robert L., 3,892,826.

Duffy, Marcus L. Structural steel punch. 3,892,154, Cl. 83-368.000.

Duguay, Michel Albert, to Bell Telephone Laboratories, Incorporated. Optical scanner utilizing organ arrays of optical fibers. 3,892,468, Cl. 350-96.00B.

Duiker, Fokke: *See*—
Lainez, Lucien; Duiker, Fokke; Bayard, Joel; and Di Campli, Dominique, 3,892,025.

Duke, Roy B., to Marathon Oil Company. Preparation of alkyl furans by dehydrocyclization. 3,892,783, Cl. 260-346.10R.

Dumke, William P.; and Woodall, Jerry M., to International Business Machines Corporation. Laser device having enclosed laser cavity. 3,893,044, Cl. 331-94.50H.

Dunaevsky, Vladimir Izrailevich: *See*—
Almen, Iosif Abramovich; Krasner, Efim Elevich; Dunaevsky, Vladimir Izrailevich; and Kireev, Ivan Nikitich, 3,892,152.

Dunford, Donald. Controlled flying kite. 3,892,375, Cl. 244-153.00R.

Dunlop Holdings Limited: *See*—
Powell, Leslie Vernon; and Edwards, Reginald Harold, 3,892,269.

Dunlop Limited: *See*—
Coton, William Henry, 3,892,132.
Dowell, Frederick Sidney, 3,892,293.
Higgens, Kenneth Henry, 3,893,035.
Pusey, Michael Stanley, 3,892,685.
Redmond, Glyn Beresford; Hill, Ernest John Harold; and Evans, Maurice James, 3,892,376.

Dunn, David S.: *See*—
Braun, William A.; and Dunn, David S., 3,893,180.

Dunning, Beverly W., Jr.: *See*—
Leavenworth, Howard W., Jr.; Amey, Earle B.; Dunning, Beverly W., Jr.; Gabler, Robert C., Jr.; and Goldsmith, Carl E., 3,892,639.

du Pont de Nemours, E. I., and Company: *See*—
Albert, Robert Eyer, 3,892,905.
Koslowski, Manfred Gunter, 3,892,020.

Duraform Inc.: *See*—
Williams, Chauncey L.; Villa, Alfonso; and Humphrey, David H., 3,892,452.

Durling, Harold, to Midland-Ross Corporation. Pneumatic brake system. 3,892,444, Cl. 303-13.000.

Duro-Test Corporation: *See*—
Thorington, Luke; and Parascandola, Louis J., 3,892,997.

Durst Ag. Fabrik Fototechnischer Apparate Bozen: *See*—
Pallingen, Hans-G; Vinatzer, Alex; and Kapfinger, Wolfgang, 3,892,493.

Dwyer, John Robert, Jr.; Karasa, Alvydas Petras; Bell, Jonathan Durand; and Allen, James Lawson, to Black and Decker Manufacturing Company, The. Spray apparatus operable by pressurized air. 3,892,359, Cl. 239-342.000.

Dykmans, Maximiliaan J. Tank winding and prestressing apparatus. 3,892,367, Cl. 242-7.220.

Dynasciences Corporation: *See*—
Shin, Ihsuk, 3,892,467.

E. R. Squibb & Sons, Inc.: *See*—
Difazio, Louis Thomas; and Augustine, Matthew Anthony, 3,892,857.
Hill, John Anthony; and Cilento, Rudolfo, 3,892,856.
Ondetti, Miguel Angel; Pluscec, Josip; and Sheehan, John T., 3,892,726.
Treuner, Uwe D.; and Breuer, Hermann, 3,892,735.

Eastman Kodak Company: *See*—
Brauning, Gerhard, 3,893,134.

Eaton Corporation: *See*—
Acker, Peter H., 3,892,291.
Danis, Louis J., 3,892,216.
Nieminski, Robert A., 3,892,294.
Pipes, George R.; Peppers, James D.; and Mormile, Wayne T., 3,892,186.

Eauclaire, Thomas J. Method and means for putting additive in plastic and other materials. 3,892,390, Cl. 259-192.000.

Ebauches S.A.: *See*—
Erard, Raoul-Henri, 3,892,068.

Ebeling, Harold O.; and Smith, Russell D., to Black, Sivalls & Bryson, Inc. Appartus for generating a heated oxygen enriched gas stream. 3,892,517, Cl. 431-90.000.

Eberle, Marcel K., to Sandoz, Inc. Substituted dihydroisoindoles. 3,892,771, Cl. 260-326.100.

Eberlin, Helmut: *See*—
Bauer, Heinrich; Dorner, Karl-Heinz; Eberlin, Helmut; Kaulen, Hans; Pazurek, Werner; Richarz, Heinz; Taubman, Harro J.; and Wolf, Gerhard, 3,892,113.

Ebert, Michael: *See*—
Pacheco, Francisco, 3,892,653.

Ebner, Peter R., to Graphic Systems, Inc. Photocomposing machine. 3,893,132, Cl. 354-13.000.

Ebnother, Anton; Gadient, Fulvio; and Suess, Rudolf, to Sandoz Ltd. Cyclo pentathiophene derivatives. 3,892,774, Cl. 260-332.20A.

Eckert, Hans-Werner; and Koppensteiner, Gunter, to Henkel & Cie, GmbH. Reaction products of ε-caprolactam with alkylene diamines. 3,892,806, Cl. 260-561.00A.

Edmonds, Walter R., to United States of America, Air Force. Laser site marking system. 3,892,488, Cl. 356-153.000.

Edwards, James Byrd; and Diehl, Francis Louvaine, to Procter & Gamble Company, The. Detergent compositions containing water insoluble starch. 3,892,681, Cl. 252-551.000.

Edwards, Reginald Harold: *See—*
Powell, Leslie Vernon; and Edwards, Reginald Harold, 3,892,269.

Edwards, Robert; and Silberg, Paul A., to Radiofone Corporation. Pulse shaping and switching apparatus. 3,892,926, Cl. 179-16.0EA.

Egleston, Harry B. Flat end closure container with reclosable pour spout. 3,892,347, Cl. 229-17.00R.

Eglin, Hans, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Target simulator for a sighting apparatus. 3,892,352, Cl. 235-61.50S.

Eheim, Gunther: *See—*
Wiedenmann, Walter, 3,892,663.

Ehrreich, John E.; and Reti, Adrian R., to Graham Magnetics. Composition of metal salt crystals having a polymeric coating. 3,892,673, Cl. 252-62.540.

Eichenberger, Werner, to Aktiengesellschaft Gebruder Loepfe. Optoelectrical apparatus with directional light sources for detecting reflection behaviour of an object. 3,892,492, Cl. 356-199.000.

Eichenhofer, Kurt-Wilhelm; and Schliebs, Reinhard, to Bayer Aktiengesellschaft. Production of azines. 3,892,805, Cl. 260-566.00B.

Eisenbau Wyhlen AG: *See—*
Bauer, Heinrich; Dorner, Karl-Heinz; Eberlin, Helmut; Kaulen, Hans; Pazurek, Werner; Richarz, Heinz; Taubman, Harro J.; and Wolf, Gerhard, 3,892,113.

Ekwall, Carl Gosta Bernhard: *See—*
Handen, Ebbe Sigfrid Adolfsson; and Ekwall, Carl Gosta Bernhard, 3,892,107.

Elec-Tro-Tec, Inc.: *See—*
Lach, Ronald Louis; and Brier, William Jean, 3,893,097.

Electro Devices, Inc.: *See—*
Kessler, Arthur R., 3,893,092.

Electrolytiques et Electrothermiques: *See—*
Doucherain, Jacques, 3,892,505.

Ellefson, Larry P.; and Renn, John, to Interface Mechanisms, Inc. Unitary flexible circuit for pen reader. 3,892,974, Cl. 250-568.000.

Elliott, Emanuel J.: *See—*
Hage, William T.; and Elliott, Emanuel J., 3,892,045.

Ellis, Harlan F.: *See—*
Small, Charles E.; Small, Lawrence E.; Small, Charles R.; and Ellis, Harlan F., 3,892,408.

Elphiac: *See—*
Defosse, Georges Jean-Pierre Hubert, 3,892,938.

Elser, Wolfgang; and Schmidt, Helmut, to BASF Aktiengesellschaft. Manufacture of alpha-methyl ethers of anthraquinone. 3,892,784, Cl. 260-383.000.

Emerson Electric Company: *See—*
Karls, Robert F.; and Enright, James H., 3,892,142.

Emlin, Boris Ivanovich: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.

Endo, Hirotoshi; Oono, Hiroshi; and Oosaka, Shigenori, to Fuji Photo Film Co., Ltd. Light beam recording device. 3,893,129, Cl. 346-77.00E.

Enea, Horace J.: *See—*
Orban, Richard; Terry, Stephen C.; and Enea, Horace J., 3,893,075.

Engelsmann, Dieter: *See—*
Winkler, Alfred; Engelsmann, Dieter; and Schroder, Rolf, 3,893,139.

English Electric Valve Company Limited: *See—*
Scholz, Hans, 3,892,994.

Enright, James H.: *See—*
Karls, Robert F.; and Enright, James H., 3,892,142.

Enthone, Incorporated: *See—*
Mallico, Charles D., 3,892,635.

Envirex Inc.: *See—*
Quast, Gilbert W., 3,892,666.

Erard, Raoul-Henri, to Ebauches S.A. Timepiece having a motor spring and a barrel. 3,892,068, Cl. 58-86.000.

Erdelitsch, Herbert; and Hecht, Walter, to SWF Spezialfabrik fur Autozubehor. Steering column switch assembly. 3,892,932, Cl. 200-61.270.

Eriksson, Erik Gustav Lennart: *See—*
Johansson, Karl Ingvar Georg, 3,892,896.

Erlemann, Gustav; and Ippen, Hellmut, Dr., to Hoffmann-La Roche Inc. Method of protecting the skin from ultraviolet radiation. 3,892,844, Cl. 424-59.000.

Errede, Louis A.: *See—*
Watts, Ronald E.; and Errede, Louis A., 3,892,575.

ESB Incorporated: *See—*
Bell, James E.; and Laczko, Robert P., 3,892,595.

Esposito, Louis V.: *See—*
Burkus, John; Leclerc, Robert G.; and Esposito, Louis V., 3,892,713.

Etablissement Public dit: Agence Nationale de Valorisation de la Recherche: *See—*
Segui, Alain Georges, 3,893,062.

Estes, Nelson N.: *See—*
Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., 3,893,063.

Estradier, Francoise: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,892,749.

Eszakmagyarorszagi Vegyimuvek: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Szatala, Odon; Andriska, Viktor; Grega, Erzsebet, nee Toth; Pinter, Zoltan; and Nagy, Sandor, 3,892,747.

Ettischer, Helmut. Dual lens camera focus means. 3,893,137, Cl. 354-197.000.

Evans, Maurice James: *See—*
Redmond, Glyn Beresford; Hill, Ernest John Harold; and Evans, Maurice James, 3,892,376.

Evans Products Company: *See—*
Heussy, William C., 3,892,620.

Evans, Thomas E.: *See—*
Marcoux, Leo; Flanagan, Charles D.; and Evans, Thomas E., 3,893,054.

Everett, Harry F.: *See—*
Taylor, Duane F.; Everett, Richard C.; Everett, Harry F.; and Williams, Norman C., 3,892,229.

Everett, Richard C.: *See—*
Taylor, Duane F.; Everett, Richard C.; Everett, Harry F.; and Williams, Norman C., 3,892,229.

Eversteijn, Franciscus Cornelis; and Peek, Hermanus Leonardus, to U.S. Philips Corporation. Method of manufacturing semiconductor devices. 3,892,607, Cl. 148-186.000.

Exxon Research and Engineering Company: *See—*
Burke, Oliver W., Jr., 3,892,697.
Burke, Oliver W., Jr., 3,892,698.
Burke, Oliver W., Jr., 3,892,700.
Burke, Oliver W., Jr., 3,892,701.
Burke, Oliver W., Jr., 3,892,702.
Burke, Oliver W., Jr., 3,892,703.
Song, Won R.; and Jacobson, Norman, 3,892,671.

Eyelet Specialty Co., Inc.: *See—*
Schneible, Seth R., 3,892,326.

Fache, Michel: *See—*
Chiron, Bernard; and Fache, Michel, 3,893,109.

Faletti, Vincent R., Jr., to Conco Inc. Shuttle fork mechanism with probe means. 3,892,324, Cl. 214-730.000.

Farbenfabriken Bayer AG: *See—*
Metzger, Carl; Meiser, Werner; Buchel, Karl Heinz; and Plempel, Manfred, 3,892,764.

Farmer, Edward R.: *See—*
Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., 3,892,612.

Farrant, David A.; and Dedona, Francis A., to Scionics Corporation, The. Extrusion orifice plate for extruding potato mix. 3,892,511, Cl. 425-464.000.

Fash, William G.: *See—*
Leach, Jack; and Fash, William G., 3,891,996.

Fathauer, Jack E., to Midland-Ross Corporation. Retractable latch mechanism for cargo container spreaders. 3,892,436, Cl. 294-81.0SF.

Febvre, Paul F.; and Laing, Virgil Lee, to Hewlett-Packard Company. Probe multimeter with display inverting means. 3,893,028, Cl. 324-115.000.

Fedders Corporation: *See—*
Daily, Thomas Edward, 3,892,453.

Federal Manufacturing Company: *See—*
Held, Chester W., 3,892,264.

Feeney, John D., to Western Electric Company, Incorporated. Wave guide antenna horn. 3,893,122, Cl. 343-705.000.

Felix, Arthur Martin; Toome, Voldemar; and Weigele, Manfred, to Hoffmann-La Roche Inc. Colorimetric and fluorometric method. 3,892,530, Cl. 23-230.00R.

Felt, Maurice D., to Sacomo Sierra Inc. Seal ring. 3,892,418, Cl. 277-205.000.

Felton, Jeffrey L.: *See—*
Coffey, Donald E.; Harrington, Robert E.; and Felton, Jeffrey L., 3,892,309.

Ferber, Fred: *See—*
Goordman, Robert V.; and Ferber, Fred, 3,892,553.

Ferguson, Robert D.: *See—*
Jones, Franklin R.; and Ferguson, Robert D., 3,892,249.

Ferkl, Frantisek: *See—*
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Cap, Antonin; Ripka, Josef; and Junek, Jan, 3,892,063.

Ferrar, Carl M., to United Aircraft Corporation. Sequentially switched laser gyro. 3,892,486, Cl. 356-106.0LR.

Ferris, Ray L., to Pullman Incorporated. Fifth wheel plate assembly for trailer hitch. 3,892,426, Cl. 280-432.000.

Fest, Christa; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-Alkyl-O-[3-cyano-quinolyl-(2)]-thionophosphonic acid esters. 3,892,753, Cl. 260-283.0CN.

Feterl, Leon G. Bale handling and feeding container. 3,892,202, Cl. 119-60.000.

Finch, DeVer C., to Honeywell Information Systems Inc. Apparatus for producing timing signals that are synchronized with asynchronous data signals. 3,893,033, Cl. 328-63.000.

Finet, Jean Maurice, to Honeywell Information Systems Inc. Method and apparatus for calculating the cyclic code of a binary message. 3,893,078, Cl. 340-146.1AL.

Firestone Tire & Rubber Company, The: *See—*
Lohr, Delmar F., Jr.; and Kay, Edward L., 3,892,693.
Marsh, Gerald Leonard, 3,892,398.

Firmenich S.A.: *See—*
Buchi, George H., 3,892,782.
Schulte-Elte, Karl-Heinrich, 3,892,809.

Fisher, Fred W. Compound removal tool. 3,892,039, Cl. 30-279.00R.

Fisk, Dale Edward; Homan, Merle Edward; Meiley, Charles Laurie; Reynolds, Zack Dwayne; Watkins, Robert Vernon; and Wiedmer, Fritz S., to International Business Machines Corporation. Electric signal exchange switching arrangement. 3,892,925, Cl. 179-15.0AT.

Fitch, Clifford E.; and Fitch, Clifford E., Jr. Apparatus for making pizzas or the like. 3,892,171, Cl. 99-450.700.

Fitch, Clifford E., Jr.: *See—*
Fitch, Clifford E.; and Fitch, Clifford E., Jr., 3,892,171.

Flaig, Christian. Apparatus for screwing headless threaded fasteners. 3,892,147, Cl. 81-53.200.

Flanagan, Charles D.: *See—*
Marcoux, Leo; Flanagan, Charles D.; and Evans, Thomas E., 3,893,054.

Fleenor, Warren O. Door mounting for cargo handling mechanism. 3,892,088, Cl. 49-37.000.

Florent, Jean: *See—*
Mancy, Denise; Florent, Jean; and Preud'Homme, Jean, 3,892,849.

FMC Corporation: *See—*
Wright, Carl Leonard, 3,892,718.

Foerster, George S.; and Statham, Charles D., to N L Industries, Incorporated. Magnesium alloy for die casting. 3,892,565, Cl. 75-168.00C.

Forbes Jones, Robin Mackay; and Petersen, Walter Adrian, to International Nickel Co., Inc., The. Highly castable, weldable, oxidation resistant alloys. 3,892,541, Cl. 29-196.100.

Ford, Keith Graham: *See—*
Guest, Christopher John Scott; and Ford, Keith Graham, 3,892,882.

Forney Engineering Company: *See—*
Paredes, Candelario; and Horn, Robert, 3,893,093.

Foseco International Limited: *See—*
Clark, Peter Stanley; and Bloodworth, David John, 3,892,611.
Hazlehurst, Ian James, 3,892,395.
Schmidt, Dieter; Lorkin, Clive Graham; and Schiffarth, Josef, 3,892,886.

Foster, Charles C.; and Hughes, Leonard W. Oscillating power switching circuit for alternately energizing two lights. 3,893,041, Cl. 331-45.000.

Foster, Karl: *See—*
Thornburg, Donald R.; and Foster, Karl, 3,892,604.

Foster, Larry W.: *See—*
McGrew, John P.; Foster, Larry W.; Katzer, John David; and Wilson, Ian S., 3,892,516.

Foster Wheeler Corporation: *See—*
Welden, Robert P., Jr.; and Gorzegno, Walter P., 3,892,191.

Fox, Roy K. N.; and Patterson, Rowan W., to Weatherford Oil Tool (UK) Ltd. Rotary drive apparatus. 3,892,140, Cl. 74-224.000.

Frankische Isolierrohr-und Metallwaren Werke Gebr. Kirchner: *See—*
Hauck, Edgar, 3,892,912.

Franz, Dennis L. Rotary valve. 3,892,220, Cl. 123-190.00E.

Frechet, Daniel: *See—*
Nedelec, Lucien; and Frechet, Daniel, 3,892,756.

Frechtling, Arthur C., to Union Carbide Corporation. Reconstitutable vinyl acetate polymer powders from non-aqueous dispersion. 3,892,822, Cl. 260-875.000.

Fredericks, Alan D., to Oceanography International Corporation. Method and apparatus for vaporizing liquids to be contacted with a carrier gas. 3,892,528, Cl. 23-230.0PC.

Freedman, Frank B.; and Ufford, Keith A., to Sci-Med, Inc. Oxygenator gas distribution header. 3,892,533, Cl. 23-258.500.

Freeman, John R.; Poukey, James W.; Shope, Steven L.; and Yonas, Gerold, to United States of America, Energy Research and Development Administration. Relativistic electron beam device. 3,892,970, Cl. 250-396.000.

Frei, Karl; and Ripley, Gerald E., to Bendix Corporation, The. Bicycle brake. 3,892,301, Cl. 192-6.00R.

Frey, Christoph, to Ciba-Geigy Corporation. New azomethine pigments and processes for their manufacture. 3,892,750, Cl. 260-270.00Q.

Frey, Richard L.: *See—*
Kendy, Leonard; and Frey, Richard L., 3,892,466.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Kleister, Heinz; and Sommer, Walter, 3,892,143.

Fritz Victor Hasselblad: *See—*
Frode, Ralf Sture, 3,893,138.

Frode, Ralf Sture, to Fritz Victor Hasselblad. Accessory socket for interchangeable lens for photographic cameras. 3,893,138, Cl. 354-286.000.

Frost, Lawrence W.: *See—*
Alvino, William M.; and Frost, Lawrence W., 3,892,768.

Fry, Robert Eden: *See—*
Glover, Douglas Wade; and Fry, Robert Eden, 3,892,462.

Fujawa, Eugene. Tape dispenser releasably securable to a supporting surface. 3,892,369, Cl. 242-55.530.

Fuji Electric Co., Ltd.: *See—*
Ueda, Tsuneo; and Somiya, Seiichi, 3,891,999.

Fuji Kasui Engineering Co., Ltd.: *See—*
Uchiyama, Hisashi; Meno, Naohiko; Senjo, Teizo; and Kobayashi, Makio, 3,892,837.

Fuji Photo Film Co., Ltd.: *See—*
Endo, Hirotoshi; Oono, Hiroshi; and Oosaka, Shigenori, 3,893,129.
Shiba, Keisuke; and Hirose, Takeshi, 3,892,572.
Tatsuta, Sumitaka; and Ueno, Wataru, 3,892,573.

Fuji Photo Optical Co., Ltd.: *See—*
Ando, Kunio; and Mukoyama, Ryuzo, 3,893,136.

Fuji Xerox Co., Ltd.: *See—*
Okada, Ryuzo, 3,892,480.

Fujisawa, Fumio: *See—*
Takenoshita, Mitsuaki; Fujisawa, Fumio; and Nakamura, Ichiro, 3,892,292.

Fujitsu Ltd.: *See—*
Inaba, Seiuemon; Shimizu, Kanryo; Hashimoto, Yoshihiro; Usami, Hiroshi; and Amemiya, Youichi, 3,893,011.

Fukuda, Masataro; and Iwaki, Tsutomu, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing electrodes for fuel cells. 3,892,592, Cl. 136-120.0FC.

Fukui, Takeo: *See—*
Oda, Nakaaki; Iwasa, Shozo; Idohara, Mitsuru; Horie, Yoshio; Fukui, Takeo; and Takasaka, Naomichi, 3,892,709.

Fukuoka, Toshimi, to Sony Corporation. Astable multivibrator circuit. 3,893,043, Cl. 331-113.00R.

Fuller, Francis W.: *See—*
Miller, Kenneth J.; Merritt, Paul H.; and Fuller, Francis W., 3,892,119.

Funakoshi, Katsumi: *See—*
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kato, Teiji; Tomoshige, Toru; Funakoshi, Katsumi; and Kobayashi, Toshio, 3,892,717.

Funderburk, Ervin M. Pistol grip for a camera. 3,893,144, Cl. 354-293.000.

Furukawa, Hikaru; Kumazawa, Shozo; and Wakayama, Noriyuki, to Takeda Riken Industry Company Limited. Analogue-digital voltage measuring apparatus. 3,893,104, Cl. 340-347.0AD.

Furuta, Motohiro, to Zenkoku Reitogyoniku Kyokai. Method of purification of waste water produced from the packing of meat and aquatic animals. 3,892,640, Cl. 204-149.000.

Fuss, Peter Siegfried, to Bell Telephone Laboratories, Incorporated. Cascade digital fast fourier analyzer. 3,892,956, Cl. 235-156.000.

Fydelor, Peter John: *See—*
Charlesby, Arthur; Fydelor, Peter John; and Morris, Adele Patricia, 3,892,594.

G.A.O. Gesellschaft fur Automation: *See—*
Bresler, Horst, 3,892,111.

G. D. Searle & Co.: *See—*
Jiu, James; and Mizuba, Seth S., 3,892,848.
Short, George E., 3,892,855.

G & O Industries Inc.: *See—*
Gomez, Richard T.; and Otis, Christopher A., 3,893,098.

G. Siempelkamp & Co.: *See—*
Hutz, Gerhard, 3,892,619.

Gabler, Robert C., Jr.: *See—*
Leavenworth, Howard W., Jr.; Amey, Earle B.; Dunning, Beverly W., Jr.; Gabler, Robert C., Jr.; and Goldsmith, Carl E., 3,892,639.

Gadient, Fulvio: *See—*
Ebnother, Anton; Gadient, Fulvio; and Suess, Rudolf, 3,892,774.

Garcea, Giampaolo, to Alfa Romeo S.p.A. Device for regulating the rate of flow of the air blown into the exhaust duct of an internal combustion engine. 3,892,071, Cl. 60-288.000.

Gardey, Robert, to Compagnie Electro-Mecanique. Apparatus for degassing a condenser operating in a thermal cycle. 3,892,548, Cl. 55-194.000.

Gardiner, Kenneth W.: *See—*
Schaefer, Louis F.; and Gardiner, Kenneth W., 3,892,481.

Garratt, Peter Garth; and Hoigne, Juerg, to Lonza Ltd. Method for the preparation of protective coating. 3,892,884, Cl. 427-36.000.

Gasik, Ljudmila Ivanovna: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.

Gasik, Mikhail Ivanovich: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.

Gawron, Stanley A., to Addressograph-Multigraph Corporation. Automatic toner concentrate detector and control device. 3,892,672, Cl. 252-62.100.

Gay, Derek J.; and Smedley, William H., to Mattel, Inc. Flipper mechanism for toy vehicles. 3,892,086, Cl. 46-202.000.

Gay, Jacob Douglas, Jr., to International Spike, Inc. Fertilizer. 3,892,552, Cl. 71-1.000.

Gayfer, John Roland, to British Leyland UK Limited. Fuel injector. 3,892,362, Cl. 239-533.000.

GD-Anker Gebirgs-Duebel-Anker GmbH & Co. KG: *See*— Gruber, Rudolf, 3,892,101.

Geisslinger, Wolfgang: *See*— Winkler, Alfred; Geisslinger, Wolfgang; and Ungnadner, Peter, 3,892,479.

General Aquadyne, Inc.: *See*— Jones, Richard F., 3,892,234.

General Electric Company: *See*— Allen, Howard G., 3,892,986.
Barker, Jabus, 3,893,124.
Boldebuck, Edith M., 3,892,716.
Bunker, William M., 3,892,051.
Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., 3,892,612.
Gisslen, Jan M., 3,892,358.
Hapeman, Martin Jay; and Kobylinski, Joseph Anthony, 3,892,300.
Kotos, Peter; and Kokolis, Harry G., 3,893,052.
Lee, Art, 3,893,091.
Martin, Donald L., 3,892,598.
Merritt, Robert Bruce; and Hester, Norbert John, 3,892,485.
Peterson, Marvin A., 3,892,647.
Smeggil, John G.; and Charles, Richard J., 3,892,599.
Smeggil, John G.; and Charles, Richard J., 3,892,600.
Smeggil, John G.; and Charles, Richard J., 3,892,601.

General Film Development Corporation: *See*— Speers, Daniel E., 3,892,569.

General Foods Corporation: *See*— Wass, James J.; and Meehan, Joseph G., 3,892,388.

General Instrument Corporation: *See*— Baker, Lamar T., 3,893,087.

General Mills Fun Group, Inc.: *See*— Meth, Harry; and Greenberg, Allen A., 3,892,510.

General Mills, Inc.: *See*— Billigmeier, James E.; Melby, Allan L.; Peerman, Dwight E.; and Roesler, Richard R., 3,892,785.

General Motors Corporation: *See*— Baker, Peter J., 3,892,449.
Bernard, James A., 3,892,105.
Cole, Edward N., 3,892,213.
Heidacker, Walter C., 3,892,214.
Hewko, Lubomyr O., 3,892,134.
Hewko, Lubomyr O., 3,892,135.
Hickling, Robert; Posey, Joe W.; and Wilken, Irvin D., 3,892,215.
Jackson, Richard C.; and Wasserbaech, Eberhard E., 3,892,419.
Preiser, Mark E.; Johnston, Richard W.; and Neuman, John G., 3,892,219.
Thornburgh, William F., 3,892,026.

General Tire & Rubber Company, The: *See*— Crites, Robert G., 3,892,616.

Genest, Leonard J.: *See*— Klayman, Arnold I.; and Genest, Leonard J., 3,892,288.

Gengnagel, Kurt, to Hoechst Aktiengesellschaft. Process for the preparation of 1-nitroben zene-2-carboxylic acid alkyl ester-5-carboxylic acid amides. 3,892,797, Cl. 260-471.00R.

Gerber, Hans-Rudolf: *See*— Pass, Herbert A.; Gerber, Hans-Rudolf; and Green, David Howard, 3,892,555.

Gerlach, Hans W., to Summit Metal Fabricating, Inc. Adjustable metal shearing machine. 3,892,155, Cl. 83-460.000.

Germanas, Dalia; and Pollitzer, Ernest L., to Universal Oil Products Company. Hydrocarbon isomerization catalyst. 3,892,683, Cl. 252-442.000.

Gersamia, Eduard Galaktionovich: *See*— Arakelov, Mikhail Alexandrovich; Gersamia, Eduard Galaktionovich; Zedgenidze, Tengiz Grigorievich; and Nozadze, Gennady Pavlovich, 3,892,034.

Getman, Ronald K., to Sperry Rand Corporation. Apparatus and method for multiple mode motor. 3,892,503, Cl. 418-61.00B.

Ghetti, Giuseppe: *See*— Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, 3,892,712.

Giacino, Christopher: *See*— Wilson, Richard A.; and Giacino, Christopher, 3,892,878.

Giani, Adolfo, to Reggiani, S.p.A. Adjustable rotary screen support with telescoping drive. 3,892,177, Cl. 101-116.000.

Gianni, Bianchini, to Societa Italiana Elettronica S.p.A. Power source for electronic flame detection devices and the like. 3,892,999, Cl. 315-149.000.

Giglia, Robert Domenico, to American Cyanamid Company. Self-supporting pigment layers for electrochromic display. 3,892,472, Cl. 350-160.00R.

Gilbert, Paul T., to Beckman Instruments, Inc. Apparatus for sequencing peptides and proteins. 3,892,531, Cl. 23-253.00R.

Gilchrist, James E.: *See*— Campbell, Jeptha E.; and Gilchrist, James E., 3,892,632.

Giles, Paul M., to United States of America, Energy Research and Development Administration. Rapid digestion process for determination of trichinellae in meat. 3,892,529, Cl. 23-230.00B.

Gillette Company, The: *See*— Perry, Roger L., 3,892,036.

Girling Limited: *See*— Nicholls, Lawrence George, 3,892,397.

Girone, Carmine Joseph: *See*— Pacheco, Francisco, 3,892,653.

Gisslen, Jan M., to General Electric Company. Nozzle seal. 3,892,358, Cl. 239-265.390.

Gist-Brocades N.V.: *See*— Struyk, Adrianus Petrus; and Waisvisz, Jacques Maurits, 3,892,850.

Gitlitz, Melvin H., to M & T Chemicals Inc. Composition and method for combatting fungi and mites containing triorganotin compounds. 3,892,862, Cl. 424-288.000.

Gitlitz, Melvin H.; and Kushlefsky, Bernard G., to M & T Chemicals Inc. Fungicidal and miticidal method containing triorganotin compounds. 3,892,863, Cl. 424-288.000.

Glaser, David, to Burroughs Corporation. Display apparatus having segmented integral regulator. 3,893,101, Cl. 340-336.000.

Glaser, Hermann: *See*— Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, 3,892,674.

Glasson, William J.; and Janssen, Robert L. Golf ball direction indicator. 3,892,414, Cl. 273-185.00R.

Glaxo Laboratories Limited: *See*— Humber, David Cedric; and Lynd, Anita Lynda Lucrece, 3,892,736.

Glazkov, Vsevolod Ivanovich; Kotik, Viktor Gerasimovich; and Gunin, German Mikhailovich. Method and apparatus for measuring electrochemical potential difference between a metallic structure and earth. 3,893,026, Cl. 324-72.000.

Glick, Ellis W.: *See*— Bossen, Douglas C.; Cordi, Vincent A.; Hsiao, Mu-Yue; Shiffrin, Barry N.; and Glick, Ellis W., 3,893,070.

Globe-Lak, N.V.: *See*— Hoes, Jan, 3,892,379.

Glover, Douglas Wade; and Fry, Robert Eden, to AMP Incorporated. Plastic high voltage receptacle with embedded metal flange. 3,892,462, Cl. 339-126.000.

Godard, Bruno; Lacour, Bernard; and Michon, Maurice, to Compagnie Generale d'Electricite. Parallel plate transmission line laser excitation system. 3,893,046, Cl. 331-94.50G.

Goedde, Edmund F.; Hoover, Gary D.; and Barakauskas, Edward J., to Westinghouse Electric Corp. Cambered missile nose. 3,892,194, Cl. 114-20.00R.

Goemans, Antonius Hermanus: *See*— Bloem, Jan; and Goemans, Antonius Hermanus, 3,892,940.

Golborn, Peter; and Dever, James L., to Hooker Chemicals & Plastics Corporation. Phosphorus containing vinyl ethers. 3,892,578, Cl. 106-16.000.

Gold, Joseph; Kim-Eng, Edward; and Plante, Paul Emile, to Valcor Engineering Corporation. Electromagnetic clutch brake assembly. 3,893,191, Cl. 310-76.000.

Goldin, Morris, to Summa Corporation. Flat telescoped cartridge casing. 3,892,181, Cl. 102-40.000.

Goldsmith, Carl E.: *See*— Leavenworth, Howard W., Jr.; Amey, Earle B.; Dunning, Beverly W., Jr.; Gabler, Robert C., Jr.; and Goldsmith, Carl E., 3,892,639.

Golla, Manfred: *See*— Lutz, Klaus; and Golla, Manfred, 3,892,557.

Golosinec, Olga C.: *See*— Kolen, Eugene P.; and Golosinec, Olga C., 3,892,873.

Gomez, Richard T.; and Otis, Christopher A., to G & O Industries Inc. Visual signaling system for offices. 3,893,098, Cl. 340-311.000.

Goode, Jeffrey Leonard, to Imperial Chemical Industries Limited. Packaging method and apparatus. 3,892,057, Cl. 53-14.000.

Goodman, Alvin Malcolm; and Breece, James Miklos, to RCA Corporation. Provision of reproducible thin layers of silicon dioxide. 3,892,891, Cl. 427-255.000.

Goodson, Sam M. Cloth turner. 3,892,341, Cl. 223-43.000.

Goodyear Tire & Rubber Company, The: *See*— White, John R.; and Hogan, James M., 3,892,691.

Goordman, Robert V.; and Ferber, Fred. Product for providing a physical medium for plant growth. 3,892,553, Cl. 71-13.000.

Goral, Alvin G. Inflatable portable sign. 3,892,081, Cl. 40-214.000.

Goralski, Christian T., to Dow Chemical Company, The. Amides of dibromo-and tribromomethanesulfonic acids. 3,892,743, Cl. 260-247.10R.

Goransson, Rolf, to Aktiebolaget Svenska Flaktfabriken. Arrangement for suspending and controlling precipitation electrodes. 3,892,545, Cl. 55-112.000.

Gorzegno, Walter P.: *See*— Welden, Robert P., Jr.; and Gorzegno, Walter P., 3,892,191.

Goto, Hachiro; Tanaka, Atsushi; Ilzuka, Shiho; and Kitamura, Takahiko, to Teijin Ltd. Thermoplastic polyamide urethane urea resins of improved properties. 3,892,820, Cl. 260-858.000.

Gotz, Hans, to Daimler-Benz Aktiengesellschaft. Arrangement for preventing the soiling of devices arranged at the rear end of motor vehicles. 3,892,439, Cl. 296-137.00R.

Gould, Sheldon D. Button mounting device. 3,892,013, Cl. 24-90.00E.

Grady, John K.: *See*— Howarth, John J.; Grady, John K.; and Rice, David B., 3,892,967.

Graham Magnetics: *See*— Ehrreich, John E.; and Reti, Adrian R., 3,892,673.

Gralenski, Nicholas M.; Wada, George; and Bates, David J., to Watkins-Johnson Company. Convergent flow hollow beam X-ray gun construction. 3,892,989, Cl. 313-59.000.

Gran, William M. Hand-held multi-purpose electric meat tenderizer. 3,892,988, Cl. 310-50.000.

Graphic Systems, Inc.: *See—*
Ebner, Peter R., 3,893,132.

Grasselli, Robert K.; Suresh, Dev. D.; and Milberger, Ernest C., to Standard Oil Company. Process for the manufacture of unsaturated aldehydes acids and nitriles from the corresponding olefins. 3,892,794, Cl. 260-465.300.

Green, David Howard: *See—*
Pass, Herbert A.; Gerber, Hans-Rudolf; and Green, David Howard, 3,892,555.

Green, Victor J. Exercise apparatus. 3,892,403, Cl. 272-65.000.

Greenberg, Allen A.: *See—*
Meth, Harry; and Greenberg, Allen A., 3,892,510.

Greenblatt, Eugene Newton: *See—*
Hofmann, Corris Mabelle; Osterberg, Arnold Curtis; Greenblatt, Eugene Newton; and Tedeschi, David Henry, 3,892,772.

Grega, Erzsebet, nee Toth: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Szatala, Odon; Andriska, Viktor; Grega, Erzsebet, nee Toth; Pinter, Zoltan; and Nagy, Sandor, 3,892,747.

Grenon, Lawrence A., to Motorola, Inc. Scannable light emitting diode array and method. 3,893,149, Cl. 357-17.000.

Griebat, Martin. Taping machine. 3,892,618, Cl. 156-355.000.

Griffin, Wendell L., to Viking Industries, Inc. Contact element for electrical connector. 3,892,464, Cl. 339-184.00M.

Grisell, Charles P., to Rust Engineering Company. Electrostatic precipitator. 3,892,546, Cl. 55-129.000.

Grobman, William, to Molins Machine Company, Inc. Counter ejector. 3,892,168, Cl. 93-93.00C.

Grolitsch, Erhard. Method for the manufacture of crystalline, flowable, stable fat powders or mixtures of such fat powders with other powdery materials. 3,892,880, Cl. 426-541.000.

Gross, David A.: *See—*
Kotok, Alan; Kent, Allan R.; and Gross, David A., 3,893,084.

Gross, Josef: *See—*
Morrell, Albert Maxwell; Barkow, William Henry; and Gross, Josef, 3,892,996.

Groupement pour les Activities Atomiques et Avancees: *See—*
Veron, Bernard, 3,892,317.

Gruber, Peregrinus; and Seidelman, Gerald. Plastic cages for roller bearings. 3,892,447, Cl. 308-217.000.

Gruber, Rudolf, to GD-Anker Gebirgs-Duebel-Anker GmbH & Co. KG. Method of anchoring an anchoring bolt in a bore hole. 3,892,101, Cl. 61-45.00B.

Gruenman, Vsevolod; and Hoffer, Max, to Hoffmann-La Roche Inc. Substituted benzylethylenedicarbamates. 3,892,777, Cl. 260-340.500.

GTE Automatic Electric Laboratories Incorporated: *See—*
Celek, John Edward, 3,893,172.
Harp, Maurice C., 3,893,040.
Martin, Lewis P.; and Trent, Lynn E., 3,892,263.
Pulles, Eduard J., 3,892,959.

Gubler, Paul: *See—*
Rebsamen, Albert; and Gubler, Paul, 3,892,019.

Guderjahn, Charles A., to Rockwell International Corporation. Low drag magnetic suspension system. 3,892,185, Cl. 104-148.0LM.

Guercio, John Francis. Highway lighting system. 3,893,000, Cl. 315-159.000.

Guest, Christopher John Scott; and Ford, Keith Graham, to Union Carbide Corporation. Process for plasma flame spray coating in a subatmospheric pressure environment. 3,892,882, Cl. 427-34.000.

Gulati, Suresh T.; Hagy, Henry E.; and McCartney, John S., to Corning Glass Works. Preload means for ceramic substrate in exhaust gas purifiers. 3,892,537, Cl. 23-288.0FC.

Gumze Ltd.: *See—*
Sakairi, Hiroshi; Tezuka, Tetuyosi; and Watanabe, Noboru, 3,892,425.

Gunderlock, Richard P.; and Knutzen, Ted H., to Westinghouse Electric Corp. Axial flow turbine stationary blade and blade ring locking arrangement. 3,892,497, Cl. 415-134.000.

Gunin, German Mikhailovich: *See—*
Glazkov, Vsevolod Ivanovich; Kotik, Viktor Gerasimovich; and Gunin, German Mikhailovich, 3,893,026.

Gunther Papenmeier KG, Maschinen-und Apparatebau: *See—*
Bremer, Horst, 3,892,515.

Gunther, Ronald G., to Yardney International Corporation. Cathode material for use in non-aqueous electrolytes. 3,892,590, Cl. 136-83.00R.

Gurney, Ferdinand J.: *See—*
De Pierre, Vincent; and Gurney, Ferdinand J., 3,892,030.

Gushue, Edward J.: *See—*
Shepard, David H.; and Gushue, Edward J., 3,893,079.

Gustafson, Robert. Copolymerized hard plastic hydrogel compositions. 3,892,721, Cl. 260-80.750.

Gutierrez, Eddie N.; and Reardon, Robert C., Jr., to Lever Brothers Company. Process for the preparation of methyl esters. 3,892,787, Cl. 260-410.90R.

Guyot, Michel Roger: *See—*
Robin, Jacques Andre; and Guyot, Michel Roger, 3,892,831.

H. Nielsen & Son Maskinfabrik A/S: *See—*
Marcher, Jorgen, 3,892,174.

H. Stoll and Co.: *See—*
Hadam, Wilhelm, 3,892,108.

Habermeier, Jurgen: *See—*
Porret, Daniel; and Habermeier, Jurgen, 3,892,765.

Hadam, Wilhelm, to H. Stoll and Co. Knitting machine, and in particular flat knitting machine. 3,892,108, Cl. 66-75.000.

Haenni & Cie Aktiengesellschaft: *See—*
Posnansky, Mario, 3,892,129.

Hage, William T.; and Elliott, Emanuel J., to Mechtron International Corporation. Fuel allocation system and method for industrial dryers and the like. 3,892,045, Cl. 34-28.000.

Hagy, Henry E.: *See—*
Gulati, Suresh T.; Hagy, Henry E.; and McCartney, John S., 3,892,537.

Hahto, Charles. Boundary-responsive wheel lock for a wheeled vehicle. 3,892,295, Cl. 188-111.000.

Hajek, James D.; and Steele, Howard R., to Upjohn Company, The. Separation of 2,4′ and 4,4′ methylene bis(phenyl isocyanate) from polymethylene polyphenyl polyisocyanates. 3,892,634, Cl. 203-72.000.

Hakala, Reynold M., to De Laval Separator Company, The. Apparatus for making cheese and the like. 3,892,172, Cl. 99-458.000.

Halaby, Sami A.; Kenny, Neal S.; and Murphy, James A., to Corning Glass Works. Method of making a magnetic recording and storage device. 3,892,888, Cl. 117-236.000.

Halasz, Istvan; Brust, Otto-Ernst; and Sebestian, Imrich, to Halasz, Istvan. Porous silicon dioxide-based adsorbents for chromatography and processes for their manufacture. 3,892,678, Cl. 252-426.000.

Haley, Paul H., to Westinghouse Electric Corp. Apparatus and method for automatically guiding a driven generator into synchronization with a power system. 3,892,978, Cl. 307-87.000.

Hall, Alan George: *See—*
Hall, Russell George; and Lea, Keith, 3,892,035.

Hall, Howard W.; and Avilla, William A., to Rietz Manufacturing Co. Horizontal screw press. 3,892,173, Cl. 100-117.000.

Hall, Robert P., Jr., to Arvin Industries, Inc. Video recorder which accepts a plurality of horizontal line rates. 3,893,169, Cl. 360-37.000.

Hall, Russell George; and Lea, Keith, to Hall, Alan George. Method and device for minimizing or alleviating the effects of loss of teeth in animals. 3,892,035, Cl. 32-12.000.

Halliburton Company: *See—*
Dill, Floyd E., 3,892,274.

Hallmark Cards, Incorporated: *See—*
Kolster, Edward J.; Bushyhead, Jess C.; and Kolster, Harvey L., 3,892,450.

Halm Instrument Co., Inc.: *See—*
Harrison, Henry, 3,892,400.

Hammann, Ingeborg: *See—*
Fest, Christa; and Hammann, Ingeborg, 3,892,753.
Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; and Hammann, Ingeborg, 3,892,823.

Hand, Claude E., II; and Hand, Claude E., III. Golf tee container. 3,892,334, Cl. 221-281.000.

Hand, Claude E., III: *See—*
Hand, Claude E., II; and Hand, Claude E., III, 3,892,334.

Handen, Ebbe Sigfrid Adolfsson; and Ekwall, Carl Gosta Bernhard, to Atlas Copco Aktiebolag. Device for transferring torque from a drill-sleeve to a drill-tool. 3,892,107, Cl. 64-23.000.

Hans Paal: *See—*
Idler, Horst, 3,892,339.

Hansen, Aage A., to International Business Machines Corporation. Read mostly memory cell having bipolar and FAMOS transistor. 3,893,085, Cl. 340-173.00R.

Hansford, Robert Julian. Propulsion units. 3,892,069, Cl. 60-226.000.

Hanysz, Stefan. Play hoop. 3,892,084, Cl. 46-114.000.

Hapeman, Martin Jay; and Kobylinski, Joseph Anthony, to General Electric Company. Motorized wheel brake system. 3,892,300, Cl. 192-2.000.

Harada, Naohiko: *See—*
Itoh, Kunio; and Harada, Naohiko, 3,892,707.

Hardtmann, Goetz E.; and Kathawala, Faizulla G., to Sandoz-Wander, Inc. 4,6-Diaryl-pyrimidin-2(1H)-ones as sleep-inducers. 3,892,860, Cl. 424-251.000.

Harman, R. A., Jr.: *See—*
Schroeder, Alfred A., 3,892,335.

Harmon, Paul G., to Railco, Inc. Modular railroad grade crossing. 3,892,356, Cl. 238-8.000.

Harner, Robert H., to S&C Electric Company. Fuse device. 3,893,056, Cl. 337-283.000.

Harp, Maurice C., to GTE Automatic Electric Laboratories Incorporated. Digital automatic frequency control system. 3,893,040, Cl. 331-14.000.

Harrington, Robert E.: *See—*
Coffey, Donald E.; Harrington, Robert E.; and Felton, Jeffrey L., 3,892,309.

Harris Dynamics: *See—*
Harris, Trevor L., 3,892,139.

Harris, Nathan G.: *See—*
Carroll, John T.; and Harris, Nathan G., 3,892,393.

Harris, Trevor L., to Harris Dynamics. Variable speed transmission. 3,892,139, Cl. 74-116.000.

Harrison, Henry, to Halm Instrument Co., Inc. Paper feeder means for printing press. 3,892,400, Cl. 271-9.000.

Harvey, Benjamin F. Variable speed hydraulic transmission. 3,892,072, Cl. 60-487.000.

Hashimoto, Junichi: *See—*
Naruse, Takeo; Hashimoto, Junichi; and Oikawa, Hideaki, 3,892,495.

Hashimoto, Yoshihiro: *See—*
Inaba, Seiuemon; Shimizu, Kanryo; Hashimoto, Yoshihiro; Usami, Hiroshi; and Amemiya, Youichi, 3,893,011.

Hathaway, Homer L., to Westinghouse Air Brake Company. Train detection and control system. 3,892,377, Cl. 246-62.000.

Hatswell, John Sidney; and Sloboda, Mieczyslaw Herman, to Johnson, Matthey & Co., Limited. Dental alloys. 3,892,564, Cl. 75-165.000.

Hattori, Masumi; and Maeda, Teizou, to Matsushita Electric Industrial Co., Ltd. Method of making an ion-selective electrode. 3,892,833, Cl. 264-115.000.

Hauber, Werner, to Mosler Safe Company, The. Pneumatic carrier system with station control. 3,892,372, Cl. 243-5.000.

Hauck, Edgar, to Frankische Isolierrohr-und Metallwaren Werke Gebr. Kirchner. Electrical conduit containing electrical conductors. 3,892,912, Cl. 174-68.00C.

Haupt, Hans O., to CRS Industries, Inc. Electrodynamic electrostatic gas charge. 3,892,544, Cl. 55-106.000.

Havera, Herbert John: *See—*
Hayao, Shin; Havera, Herbert John; and Strycker, Wallace Glenn, 3,892,748.

Hawley, Jack S.; Bates, Roger D.; and Thacker, Charles P., to Xerox Corporation. Transducer for a display-oriented pointing device. 3,892,963, Cl. 250-231.00R.

Hayao, Shin; Havera, Herbert John; and Strycker, Wallace Glenn, to Miles Laboratories, Inc. 5,5-Diphenyl-3-(piperidino, tetrahydropyridyl-1-and piperazino)-hydantoins. 3,892,748, Cl. 260-268.0PH.

Hayden, Rodney; and Davidson, Gordon M., to TRW Inc. Simple relay structure. 3,893,194, Cl. 335-202.000.

Hayes, John C., to Universal Oil Products Company. Continuous low pressure catalytic reforming process. 3,892,656, Cl. 208-139.000.

Hayward, H. Dutton, trustee: *See—*
Schulein, Joseph, 3,893,106.

Hazeley, James E., to Armstrong Cork Company. Inflatable air plenum for a suspended ceiling system. 3,892,170, Cl. 98-40.00D.

Hazlehurst, Ian James, to Foseco International Limited. Stopper rods. 3,892,395, Cl. 266-38.000.

Heberlein and Co. AG.: *See—*
Rebsamen, Albert; and Gubler, Paul, 3,892,019.

Hecht, Walter: *See—*
Erdelitsch, Herbert; and Hecht, Walter, 3,892,932.

Heckt, Neil W.: *See—*
Majeau, Henrie L.; Heckt, Neil W.; and May, Jack L., 3,893,031.

Heeg, Rudolf; and Striebich, Alfred, to Davy-Ashmore Aktiengesellschaft. Process for introducing terephthalic acid into a reaction. 3,892,798, Cl. 260-475.00P.

Heeren, Richard H., to Teletype Corporation. Semiconductor capacitor structure and memory cell, and method of making. 3,893,146, Cl. 357-14.000.

Heflinger, Lee O.: *See—*
Wuerker, Ralph F.; and Heflinger, Lee O., 3,892,487.

Heiberger, Charles A., to Air Products and Chemicals, Inc. Flexible vinyl chloride-ethylene copolymer compositions. 3,892,692, Cl. 260-23.0XA.

Heidacker, Walter C., to General Motors Corporation. Cast-in E.F.E. hot plate. 3,892,214, Cl. 123-122.0AC.

Heidborn, Wolfgang: *See—*
Biermann, Manfred; Brauer, Bernd; Heidborn, Wolfgang; Monno, Bernd; and Thiessen, Klaus, 3,892,471.

Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Jahn, Hans-Georg, 3,892,179.

Heindke, Armin; Mutz, Gerhard; Hirt, Albert; and Winkler, Werner, to Kienzle Apparte GmbH. Printing needle drive. 3,892,175, Cl. 101-93.050.

Held, Chester W., to Federal Manufacturing Company. Method and apparatus for filling bottles. 3,892,264, Cl. 141-5.000.

Hendrick, Fred W., to Robertshaw Controls Company. High pressure safety valve. 3,892,258, Cl. 137-461.000.

Hendricks, Udo: *See—*
Tamer, Ergun; Hendricks, Udo; and Quaedvlieg, Mathieu, 3,892,527.

Henkel & Cie, GmbH: *See—*
Eckert, Hans-Werner; and Koppensteiner, Gunter, 3,892,806.
Schade, Wolfgang; Krings, Peter; and Batka, Heimold, 3,892,522.

Hennel, Waclaw; Cyrus-Sobolewski, Jan; and Bartosik, Zbigniew, to Instytut Nawozow Sytucznych. Ammonia synthesis converter. 3,892,535, Cl. 23-288.00K.

Henning, Klaus: *See—*
Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, 3,892,674.

Henry Morton Unger: *See—*
Berns, Harald, 3,892,005.

Herbert, Charles H., Jr. Game based on categories of subject matter of playing tiles. 3,892,409, Cl. 273-135.0AC.

Herbert, Jean Jules Marie Ernest. Hip-joint prosthesis. 3,891,997, Cl. 3-1.000.

Herbert, William L. Isolating linear amplifier. 3,893,037, Cl. 330-59.000.

Hercules Incorporated: *See—*
Huzinec, John R., 3,892,610.
Leibfried, Raymond T., 3,892,796.

Heritage, Robert, to Rotaflex (Great Britain) Limited. Light projector fittings. 3,892,960, Cl. 240-41.35R.

Hernandez Garcia, Maria Cruz, to Cinva S.A. Method and means for molding a fastener onto a piece of fabric. 3,892,507, Cl. 425-129.000.

Hesse, Paul R., to Union Brass & Metal Manufacturing Co. Valve stem with rotatable head for compression faucet. 3,892,383, Cl. 251-88.000.

Hester, Jackson B., Jr., to Upjohn Company, The. 1-Propynylaminomethyl-6-phenyl-4H-s-triazolo[4,3-a][1,4]benzodiazepines. 3,892,763, Cl. 260-308.00R.

Hester, Norbert John: *See—*
Merritt, Robert Bruce; and Hester, Norbert John, 3,892,485.

Hetzel, Donald S.; and Torres, Anibal, to Pfizer Inc. Use of oxazoline flavoring agents and flavor extenders. 3,892,879, Cl. 426-65.000.

Heussy, William C., to Evans Products Company. Apparatus for forming envelopes of thermoplastic sheet material. 3,892,620, Cl. 156-443.000.

Hewko, Lubomyr O., to General Motors Corporation. Speedometer drive arrangement. 3,892,134, Cl. 74-12.000.

Hewko, Lubomyr O., to General Motors Corporation. Speedometer drive arrangement. 3,892,135, Cl. 74-12.000.

Hewlett-Packard Company: *See—*
Febvre, Paul F.; and Laing, Virgil Lee, 3,893,028.
Taggart, Robert B.; Barth, Richard H.; and Bailey, John S., 3,893,173.
Tung, Chung C., 3,892,958.

Hickling, Robert; Posey, Joe W.; and Wilken, Irvin D., to General Motors Corporation. Electrically heated intake manifold. 3,892,215, Cl. 123-122.00F.

Hickson, Donald A., to Chevron Research Company. Layered clay minerals, catalysts, and processes for using. 3,892,655, Cl. 208-111.000.

Higashimura, Einosuke; and Miura, Yasunobu, to Mitsubishi Rayon Co., Ltd. Process for producing hardened cement material. 3,892,704, Cl. 260-29.60S.

Higgens, Kenneth Henry, to Dunlop Limited. Amplification circuit. 3,893,035, Cl. 328-146.000.

Higgins, Edward. Magnetic ring toss apparatus. 3,892,407, Cl. 273-100.000.

Higgins, Leonard James, to Datacq Systems Corporation. Electrical encoding arrangement for typewriters having single rotary printing element. 3,892,305, Cl. 197-52.000.

High, Carl E. Game board puzzle with overlapping transparent strip members. 3,892,411, Cl. 273-155.000.

Hilger, Ronald O., to Associated Mills, Inc. Attachment for hydrotherapy bath. 3,892,363, Cl. 239-590.000.

Hilgert, Adolph J., to Johnson Service Company. Diaphragm valve apparatus and control systems employing such valve apparatus. 3,892,254, Cl. 137-116.300.

Hill, Ernest John Harold: *See—*
Redmond, Glyn Beresford; Hill, Ernest John Harold; and Evans, Maurice James, 3,892,376.

Hill, Horace E.: *See—*
Champoux, Louis A.; Hill, Horace E.; and Phillips, Joseph L., 3,892,121.

Hill, John Anthony; and Cilento, Rudolfo, to E. R. Squibb & Sons, Inc. Topical steroid formulation. 3,892,856, Cl. 424-241.000.

Hillman, Edwin K. Wind-driven motive apparatus. 3,892,501, Cl. 416-65.000.

Hinkel, Emil T., Jr., to Sterling Drug Inc. Clear aqueous antacid solution containing a polymeric meglumine-hexitol-aluminum hydroxide complex and preparation thereof. 3,892,851, Cl. 424-157.000.

Hinman, Walter L., Jr.: *See—*
Strickland, William A., Jr.; and Hinman, Walter L., Jr., 3,893,008.

Hirano, Kinichi; and Metsugi, Yoshiaki, to Hitachi Construction Machinery Co., Ltd. Control system for amphibious hydraulic excavator. 3,892,079, Cl. 37-56.000.

Hirose, Takeshi: *See—*
Shiba, Keisuke; and Hirose, Takeshi, 3,892,572.

Hirose, Yasuo, to Hitachi, Ltd. Vented nuclear fuel element. 3,892,626, Cl. 176-68.000.

Hirt, Albert: *See—*
Heindke, Armin; Mutz, Gerhard; Hirt, Albert; and Winkler, Werner, 3,892,175.

Hisatomi, Kaoru: *See—*
Uetani, Yoshio; Ikebata, Rokurou; Kashiwaya, Kentaro; Sugihara, Syoetsu; and Hisatomi, Kaoru, 3,892,591.

Hiss, Andre H.: *See—*
Plantif, Bernard E.; and Hiss, Andre H., 3,892,073.

Hitachi Construction Machinery Co., Ltd.: *See—*
Hirano, Kinichi; and Metsugi, Yoshiaki, 3,892,079.

Hitachi, Ltd.: *See—*
Hirose, Yasuo, 3,892,626.
Ichikawa, Akira, 3,892,919.
Ishizuka, Tomic, 3,892,992.
Kawagoe, Hiroto, 3,892,985.
Naitou, Masanori; Nakano, Hiraku; Kashiwai, Shinichi; Satou, Chikara; and Utamura, Motoaki, 3,892,205.
Nishihara, Motohisa; and Kato, Yomei, 3,893,064.
Ogiue, Katsumi, 3,893,155.
Oyama, Yoshishige, 3,892,211.
Takenoshita, Mitsuaki; Fujisawa, Fumio; and Nakamura, Ichiro, 3,892,292.
Tanaka, Goro; and Narahara, Toshikazu, 3,892,643.
Watanabe, Kiyoshi; Misumi, Akira; Onodera, Takayoshi; and Sunahara, Kazuo, 3,892,890.
Yamazaki, Eiichi, 3,892,995.

Hitachi Maxell, Ltd.: *See—*
Uetani, Yoshio; Ikebata, Rokurou; Kashiwaya, Kentaro; Sugihara, Syoetsu; and Hisatomi, Kaoru, 3,892,591.

Hitomi, Teiichi: *See*—
Masujima, Kiyohiko; Kotera, Noboru; and Hitomi, Teiichi, 3,892,520.

Ho, Allen P.; and Lee, Hua-Tung, to International Business Machines Corporation. Minutiae recognition system. 3,893,080, Cl. 340-146.30E.

Hobday, Trevor Maurice Norwood; and Jordan, Graham William, to P. Leiner & Sons (Wales) Limited; and Ranks Hovis McDougall Limited. Process of preparing freeze-dried gelatin. 3,892,876, Cl. 426-576.000.

Hodgson, Rodney T.; Lankard, John R.; Sorokin, Peter P.; and Wynne, James J., to International Business Machines Corporation. Tunable infra red/ultraviolet laser. 3,892,979, Cl. 307-88.300.

Hodler, Fritz. Casting mould having a ventilation duct. 3,892,508, Cl. 425-135.000.

Hoechst Aktiengesellschaft: *See*—
Gengnagel, Kurt, 3,892,797.
Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, 3,892,674.
Kleiner, Hans-Jerg; Schneider, Karl-Heinz; and Schneider, Gerhart, 3,892,524.
Sahm, Wilfried, 3,892,807.

Hoeman, Terry E., to Babcock & Wilcox Company, The. Insulating conduit. 3,892,261, Cl. 138-149.000.

Hoerner Waldorf Corporation: *See*—
Hughes, Walter R.; Vear, John P.; and Swanson, Elmer G., 3,892,346.

Hoes, Jan, to Globe-Lak, N.V. Fixation for a plate sheathing. 3,892,379, Cl. 248-225.000.

Hoetzel, John H. Dice game. 3,892,410, Cl. 273-145.00C.

Hofer, Peter H., to Union Carbide Corporation. Masking process with cold sink. 3,892,892, Cl. 427-272.000.

Hoffer, Max: *See*—
Gruenman, Vsevolod; and Hoffer, Max, 3,892,777.

Hoffmann-La Roche Inc.: *See*—
Bohlen, Peter, 3,892,532.
Erlemann, Gustav; and Ippen, Hellmut, Dr., 3,892,844.
Felix, Arthur Martin; Toome, Voldemar; and Weigele, Manfred, 3,892,530.
Gruenman, Vsevolod; and Hoffer, Max, 3,892,777.
Saucy, Gabriel, 3,892,779.
Saucy, Gabriel, 3,892,812.

Hofmann, Corris Mabelle; Osterberg, Arnold Curtis; Greenblatt, Eugene Newton; and Tedeschi, David Henry, to American Cyanamid Company. Isomer of 1-(p-chlorophenyl)-1,2-cyclopropanedicarboximide and method of use. 3,892,772, Cl. 260-326.50B.

Hogan, Elmer R., to Smith-Berger Manufacturing Corporation. Marine towing line guide. 3,892,386, Cl. 254-190.00R.

Hogan, James M.: *See*—
White, John R.; and Hogan, James M., 3,892,691.

Hoigne, Juerg: *See*—
Garratt, Peter Garth; and Hoigne, Juerg, 3,892,884.

Holdsworth, Martin Richard, to Joseph Lucas (Industries) Limited. Method of manufacturing hot pressed ceramic material based on silicon nitride. 3,892,835, Cl. 264-332.000.

Holler, Howard V., to Shell Oil Company. Catalyst for preparation of ethylene oxide. 3,892,679, Cl. 252-476.000.

Holmes, Floyd W. Hydroponic nutrient feeding control system. 3,892,982, Cl. 307-118.000.

Homan, Merle Edward: *See*—
Fisk, Dale Edward; Homan, Merle Edward; Meiley, Charles Laurie; Reynolds, Zack Dwayne; Watkins, Robert Vernon; and Wiedmer, Fritz S., 3,892,925.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Takahashi, Noriyuki; Miyahara, Hiromitsu; and Inoue, Hidehiko, 3,892,424.
Tamai, Hisashi; and Iizuka, Yoshitoku, 3,892,212.

Honeywell Inc.: *See*—
Myers, Edward B., 3,892,384.

Honeywell Information Systems Inc.: *See*—
Braun, William A.; and Dunn, David S., 3,893,180.
Finch, DeVer C., 3,893,033.
Finet, Jean Maurice, 3,893,078.

Honjyo, Michitaro. Circumcision instrument. 3,892,242, Cl. 128-346.000.

Hook, Robert H.; and Wright, George J., to Richardson-Merrell Inc. N-oxides of bis-basic tricyclic ethers. 3,892,776, Cl. 260-335.000.

Hooker Chemicals & Plastics Corporation: *See*—
Golborn, Peter; and Dever, James L., 3,892,578.

Hooks, Haywood, Jr.; and Pitts, James J., to Olin Corporation. Bis-(2-pyridyl-1-oxide) disulfide. 3,892,760, Cl. 260-294.80J.

Hoover, Gary D.: *See*—
Goedde, Edmund F.; Hoover, Gary D.; and Barakauskas, Edward J., 3,892,194.

Hopkins, Charles L. Audio actuated lamp. 3,893,081, Cl. 340-148.000.

Horan, John J. Snap-latching, snap-lighting electric lamps and methods for making same. 3,892,463, Cl. 339-144.00R.

Horie, Yoshio: *See*—
Oda, Nakaaki; Iwasa, Shozo; Idohara, Mitsuru; Horie, Yoshio; Fukui, Takeo; and Takasaka, Naomichi, 3,892,709.

Horn, Robert: *See*—
Paredes, Candelario; and Horn, Robert, 3,893,093.

Horne, Frederick F., to Airrigation Engineering Company, Inc. Method of killing roots and organic growths in sewer pipes. 3,892,588, Cl. 134-24.000.

Horner, John A.; and Baldauf, Harold C. Car cleaning apparatus. 3,892,002, Cl. 15-21.00D.

Horton, Billy M. Self-adjusting open or closed-end ratchet wrench. 3,892,150, Cl. 81-179.000.

Horwitt, Laurence G.; and Mattis, Donald J., to Sun Chemical Corporation. Cigar lighter igniting unit. 3,892,944, Cl. 219-270.000.

Hotchkiss, Manford D.; and Proctor, Ronald G. Vehicle anti-siphoning device. 3,892,330, Cl. 220-86.0AT.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz, Inc. Phenyl and substitutedphenyl benzoquinolizines. 3,892,752, Cl. 260-283.00R.

Houtsma, Adrianus J. M., to Massachusetts Institute of Technology. Soundboard-bridge configuration for acoustic guitars. 3,892,159, Cl. 84-307.000.

Howarth, John J.; Grady, John K.; and Rice, David B., to Measurex Corporation; and Grady, John K. Apparatus for radiological examination of a subject through a solid angle. 3,892,967, Cl. 250-447.000.

Howells, Roger A.: *See*—
Klee, David J.; and Howells, Roger A., 3,892,104.

Hsiao, Mu-Yue: *See*—
Bossen, Douglas C.; Cordi, Vincent A.; Hsiao, Mu-Yue; Shiffrin, Barry N.; and Glick, Ellis W., 3,893,070.
Bossen, Douglas C.; Hsiao, Mu-Yue; and Patel, Arvin M., 3,893,071.

Hudson, Jimmie E.; and Snelson, Jimmy W., to Phillips Petroleum Company. Precise temperature adjustment of reheated parison preforms. 3,892,830, Cl. 264-94.000.

Hudspeth, Thomas; Maguire, Walter W.; Rosen, Harold A.; and Kreinheder, Donald E., to Hughes Aircraft Company. Radar lobing system. 3,893,116, Cl. 343-16.00M.

Huey, Shawn. Eating utensil. 3,892,435, Cl. 294-16.000.

Hughes Aircraft Company: *See*—
Coppen, Peter J., 3,892,609.
Hudspeth, Thomas; Maguire, Walter W.; Rosen, Harold A.; and Kreinheder, Donald E., 3,893,116.
Kendy, Leonard; and Frey, Richard L., 3,892,466.
Leo, Bruno S., 3,892,102.
Lotspeich, James F., 3,892,469.
Lotspeich, James F., 3,892,470.

Hughes, Leonard W.: *See*—
Foster, Charles C.; and Hughes, Leonard W., 3,893,041.

Hughes, Robert D.: *See*—
Steigelmann, Edward F.; Ries, Herman E., Jr.; and Hughes, Robert D., 3,892,665.

Hughes, Walter R.; Vear, John P.; and Swanson, Elmer G., to Hoerner Waldorf Corporation. Asparagus container. 3,892,346, Cl. 229-14.0BE.

Humber, David Cedric; and Lynd, Anita Lynda Lucrece, to Glaxo Laboratories Limited. Process for selective blocking of the carboxyl group on the 7-position of (6R, 7R)-3-acetoxymethyl-7-(4-carboxybutanamido)ceph-3-em-4-carboxylic acid. 3,892,736, Cl. 260-243.00C.

Humboldt Products Corporation: *See*—
DePriest, Donald R.; Brandon, Bobby C.; and Buie, Connell M., 3,892,617.

Humphrey, David H.: *See*—
Williams, Chauncey L.; Villa, Alfonso; and Humphrey, David H., 3,892,452.

Humphreys, Thomas G., Jr., to Plosser, George G. Apparatus for determining the distance to a concealed conductive structure. 3,893,025, Cl. 324-67.000.

Hunia, Edward M.: *See*—
Burgman, Jerome A.; Hunia, Edward M.; and Neely, Homer E., Jr., 3,892,581.

Hunter Engineering Company: *See*—
Senften, David A., 3,892,042.

Hunter, Philip Robert: *See*—
Wolstenholme, James Graham; Watts, George; and Hunter, Philip Robert, 3,892,077.

Huntington Rubber Corporation: *See*—
Caldwell, William F., 3,892,434.

Hutchins, Alma A. Abrading tool utilizing a self adhesive abrading sheet. 3,892,091, Cl. 51-170.0TL.

Hutz, Gerhard, to G. Siempelkamp & Co. Apparatus for making laminated pressed board. 3,892,619, Cl. 156-382.000.

Huyler, Jerome F., to Aquatium, Inc. Aquarium. 3,892,199, Cl. 119-5.000.

Huzinec, John R., to Hercules Incorporated. Freeze drying process of making ultra-fine ammonium perchlorate and product. 3,892,610, Cl. 149-76.000.

Ichikawa, Akira, to Hitachi, Ltd. Speech synthesis system. 3,892,919, Cl. 179-1.0SM.

Idler, Horst, to Hans Paal. Equipment for point by point application of an adhesive. 3,892,339, Cl. 222-318.000.

Idohara, Mitsuru: *See*—
Oda, Nakaaki; Iwasa, Shozo; Idohara, Mitsuru; Horie, Yoshio; Fukui, Takeo; and Takasaka, Naomichi, 3,892,709.

Ieki, Mitsuru; Inoue, Kenji; and Shimizu, Toshio, to Matsushita Electric Industrial Co., Ltd. Alkaline cells. 3,892,593, Cl. 136-133.000.

Ignatushenko, Arkady Anatolievich: *See*—
Paton, Vladimir Evgenievich; Smolyarko, Vladimir Borisovich; Belfor, Mikhail Gdal Gershovich; Pichak, Vladimir Grigorievich; Savich, Igor Mavrikievich; Rybchenkov, Alexandr Grigorievich; Pankov, Vasily Ivanovich; and Ignatushenko, Arkady Anatolievich, 3,892,937.

Ilzuka, Shiho: *See—*
Goto, Hachiro; Tanaka, Atsushi; Ilzuka, Shiho; and Kitamura, Takahiko, 3,892,820.
Iizuka, Yoshitoku: *See—*
Tamai, Hisashi; and Iizuka, Yoshitoku, 3,892,212.
Ikebata, Rokurou: *See—*
Uetani, Yoshio; Ikebata, Rokurou; Kashiwaya, Kentaro; Sugihara, Syoetsu; and Hisatomi, Kaoru, 3,892,591.
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna. Briquette for producing aluminum-silicon. 3,892,558, Cl. 75-10.00R.
Ilukowicz, Robert John, to Preco Industries, Ltd. Plastic panel pad construction for spacing concrete panels. 3,892,902, Cl. 428-99.000.
Imperial Chemical Industries Limited: *See—*
Anderson, Robert Craig; and Calder, Alain, 3,892,244.
Beswick, Geoffrey Ernest, 3,892,793.
Brown, Edward Douglas, 3,892,733.
Clarke, Warwick Kingston; Kenyon, Ronald Wynford; and Robinson, David, 3,892,675.
Crowther, Alan Lewis; and Spencer, Christopher Buxton, 3,892,780.
Goode, Jeffrey Leonard, 3,892,057.
Parton, Brian, 3,892,742.
Smith, John Edward; and Anderson, John Galloway, 3,892,629.
Ims, Dale R.: *See—*
Ciccarelli, Roger N.; and Ims, Dale R., 3,892,567.
Inaba, Seiuemon; Shimizu, Kanryo; Hashimoto, Yoshihiro; Usami, Hiroshi; and Amemiya, Youichi, to Fujitsu Ltd. Numerical control system controlling a machine and provided with a system for compensating a position-error in the numerical control of the machine. 3,893,011, Cl. 318-685.000.
Industrial Development & Experimental Associates, Inc.: *See—*
Richie, Edward H., 3,892,145.
Industrial High Pressure Systems Inc.: *See—*
Miko, Stephen John, 3,892,250.
Infante, Carlo: *See—*
Cavoretto, James Louis; Allworth, Alfred Alden; and Infante, Carlo, 3,893,036.
Information Storage Systems, Inc.: *See—*
Sordello, Frank J., 3,893,178.
Ingus, George A. Continuous yarn drawing method and apparatus. 3,892,432, Cl. 289-1.500.
Inoue, Hidehiko: *See—*
Takahashi, Noriyuki; Miyahara, Hiromitsu; and Inoue, Hidehiko, 3,892,424.
Inoue, Kenji: *See—*
Ieki, Mitsuru; Inoue, Kenji; and Shimizu, Toshio, 3,892,593.
Instytut Nawozow Sytucznych: *See—*
Hennel, Waclaw; Cyrus-Sobolewski, Jan; and Bartosik, Zbigniew, 3,892,535.
Interface Mechanisms, Inc.: *See—*
Ellefson, Larry P.; and Renn, John, 3,892,974.
Intermadox A.G.: *See—*
Bachmann, Hans, 3,892,961.
International Business Machines Corporation: *See—*
Almasi, George S.; and Keefe, George E., 3,893,089.
Bossen, Douglas C.; Cordi, Vincent A.; Hsiao, Mu-Yue; Shiffrin, Barry N.; and Glick, Ellis W., 3,893,070.
Bossen, Douglas C.; Hsiao, Mu-Yue; and Patel, Arvin M., 3,893,071.
Chappelow, Ronald E.; Doney, Donald A.; Doulin, Joseph; Lin, Paul T.; and Schiavone, Frank A., 3,892,606.
Cuomo, Jerome J.; and Molzen, Walter W., Jr., 3,892,650.
Dumke, William P.; and Woodall, Jerry M., 3,893,044.
Fisk, Dale Edward; Homan, Merle Edward; Meiley, Charles Laurie; Reynolds, Zack Dwayne; Watkins, Robert Vernon; and Wiedmer, Fritz S., 3,892,925.
Hansen, Aage A., 3,893,085.
Ho, Allen P.; and Lee, Hua-Tung, 3,893,080.
Hodgson, Rodney T.; Lankard, John R.; Sorokin, Peter P.; and Wynne, James J., 3,892,979.
Jones, David Wilkes, 3,893,176.
Lazzarini, Donald J.; and Schultz, Lewis K., 3,892,646.
Marshall, John W.; McDonal, Earl G., Jr.; and Roath, Phillip B., 3,893,171.
Nussbaumer, Henri, 3,892,953.
Riseman, Jacob, 3,893,156.
Shakib, Iraj D., 3,892,304.
Tsui, Frank; and Tsui, Katherine, 3,892,998.
International Data Sciences, Inc.: *See—*
D'Antonio, Renato A.; and Marton, Alejandro B., 3,893,072.
International Flavors & Fragrances Inc.: *See—*
Wilson, Richard A.; and Giacino, Christopher, 3,892,878.
International Harvester Company: *See—*
Compton, William A.; Nachman, Joseph F.; and Seegall, Manfred I., 3,892,836.
Drennhaus, Alfons, 3,892,322.
International Nickel Co., Inc., The: *See—*
Forbes Jones, Robin Mackay; and Petersen, Walter Adrian, 3,892,541.
International Paper Company: *See—*
McDonald, William S.; and Johnson, Hugh B., 3,892,613.
International Spike, Inc.: *See—*
Gay, Jacob Douglas, Jr., 3,892,552.
International Standard Electric Corporation: *See—*
Overbury, Francis Gile, 3,893,118.
Vacek, Jan, 3,893,014.
International Telephone and Telegraph Corporation: *See—*
Reines, Jose; Platt, Eric G.; White, Stanley E.; Corrado, Joseph M.; and Wawryszyn, Askold W., 3,893,024.
Ippen, Hellmut, Dr.: *See—*
Erlemann, Gustav; and Ippen, Hellmut, Dr., 3,892,844.
Ishigami, Toshio, to Pioneer Electronic Corporation. Tape cartridge ejection mechanism. 3,893,184, Cl. 360-93.000.
Ishihara, Tetsuo: *See—*
Shima, Keizo; and Ishihara, Tetsuo, 3,892,900.
Ishimoto, Kenzi: *See—*
Taniguchi, Hiroyoshi; Wakabayashi, Toshio; Maeda, Takuma; and Ishimoto, Kenzi, 3,892,114.
Ishimoto, Sachio: *See—*
Kurozumi, Seizi; Toru, Takashi; and Ishimoto, Sachio, 3,892,630.
Ishizawa, Kazutomo; Akashi, Takahuni; and Otake, Sadao, to Kanegafuchi Boseki Kabushiki Kaisha. Sampling system for processing textile material in a wet condition. 3,893,010, Cl. 318-636.000.
Ishizuka Garasu Kabushiki Kaisha: *See—*
Tanaka, Takeshi, 3,892,904.
Ishizuka, Tomic, to Hitachi, Ltd. Colour picture tubes. 3,892,992, Cl. 313-414.000.
Islip, Brian Henry: *See—*
Trueman, Frederick Ranson; Couzens, Roy George Swain; and Islip, Brian Henry, 3,892,338.
Isono, Tomoyuki; and Ohmiya, Tetsuo, to Nippon Electric Company, Limited. Pulsed power supply circuit for a light-emitting discharge tube. 3,893,001, Cl. 315-287.000.
Isuzu Motors Ltd.: *See—*
Kimbara, Motoyasu; and Yoshida, Yoshitaka, 3,892,221.
Iten, Paul D.; and Mastner, Jiri, to BBC Brown Boveri & Company Limited. Tracking receiver. 3,893,113, Cl. 343-7.00A.
Ito, Ryosuke: *See—*
Takahashi, Susumu; and Ito, Ryosuke, 3,892,918.
Itoh, Kunio; and Harada, Naohiko, to Shinetsu Chemical Company. Silicone elastomer compositions. 3,892,707, Cl. 260-37.0SB.
ITT Industries, Inc.: *See—*
Oberthur, Heinrich, 3,892,445.
Iura, Yukio: *See—*
Taguchi, Tatsuya; and Iura, Yukio, 3,893,143.
Iwagami, Masao; and Miyashita, Satoshi, to Chiyoda Kako Kensetsu Kabushiki Kaisha. Pontoon type floating roof for liquid storage tank. 3,892,332, Cl. 220-219.000.
Iwaki, Tsutomu: *See—*
Fukuda, Masataro; and Iwaki, Tsutomu, 3,892,592.
Iwasa, Shozo: *See—*
Oda, Nakaaki; Iwasa, Shozo; Idohara, Mitsuru; Horie, Yoshio; Fukui, Takeo; and Takasaka, Naomichi, 3,892,709.
Izawa, Nobuharu; Katsu, Mutsuo; Murase, Yasuhiro; and Kondo, Takamitsu, to Teijin Ltd. Process for producing crimped polyester fibers of high modulus. 3,892,021, Cl. 28-72.140.
Izraeli, Hyman, to Thomas & Betts Corporation. Contact means. 3,892,460, Cl. 339-98.000.
Izumi, Rokuro: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Nagata, Akiho; Ando, Takuji; Take, Teruo; Izumi, Rokuro; Noda, Toshiharu; and Matsuura, Kazuo, 3,892,732.
J & J Manufacturing Corporation: *See—*
Keith, Arlie L., 3,893,058.
J. M. Huber Corporation: *See—*
Abercrombie, William F., Jr., 3,892,587.
Jabsen, Felix S., to Babcock & Wilcox Company, The. Industrial technique. 3,892,027, Cl. 29-200.00P.
Jackson, Richard C.; and Wasserbaech, Eberhard E., to General Motors Corporation. Balanced floating machine tool chuck. 3,892,419, Cl. 279-4.000.
Jacobsen, Jerome G., Jr., to White-Westinghouse Corporation. Clothes dryer. 3,892,048, Cl. 34-133.000.
Jacobson, Norman: *See—*
Song, Won R.; and Jacobson, Norman, 3,892,671.
Jacobson, Thor V.; and Kimbell, George H. Pulsed chemical laser. 3,893,045, Cl. 331-94.50G.
Jacuzzi Research, Inc.: *See—*
Jacuzzi, Roy A.; and Kosta, Peter L., 3,892,498.
Jacuzzi, Roy A.; and Kosta, Peter L., to Jacuzzi Research, Inc. Fluid pump with rotary seal assembly. 3,892,498, Cl. 415-170.00A.
Jagid, Bruce E.: *See—*
Rosansky, Martin G.; and Jagid, Bruce E., 3,892,589.
Jahn, Hans-Georg, to Heidelberger Druckmaschinen Aktiengesellschaft. Quick-action clamping device used in rotary cylinders of printing machines. 3,892,179, Cl. 101-415.100.
Jahnke, Richard William, to Lubrizol Corporation, The. Polymerizable hydroxy-containing esters of amido-substituted sulfonic acids. 3,892,720, Cl. 260-79.5OC.
Jamison, Will B., to Consolidation Coal Company. Method and apparatus for mining and supporting the mine roof. 3,892,100, Cl. 61-45.00R.
Janssen, Albert T., to Atlantic Richfield Company. Mining method. 3,892,442, Cl. 299-11.000.
Janssen, Hans-Georg, to Aktien-Gesellschaft "Weser". Watercraft coupling system. 3,892,195, Cl. 114-235.00R.

Janssen, Robert L.: *See*—
Glasson, William J.; and Janssen, Robert L., 3,892,414.

Japan Atomic Energy Research Institute: *See*—
Tabata, Yoneho; Ukihashi, Hiroshi; and Yamabe, Masaaki, 3,892,641.
Ugajin, Mitsuhiro; and Takahashi, Ichiro, 3,892,838.

Japan Exlan Company Limited: *See*—
Matsumura, Yasuo; Maruyama, Kunio; Akiyama, Minoru; and Kanetsuki, Katsutoshi, 3,892,719.

Jaques, Richard E.; and Siegal, Burton L., to Jaques, Richard E. Adjustable safety bindings for skis. 3,892,422, Cl. 280-11.35T.

Jarnot, Frank R. Readily installed vent for flexible cover panel. 3,892,169, Cl. 98-37.000.

Jaros, Frantisek: *See*—
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Cap, Antonin; Ripka, Josef; and Junek, Jan, 3,892,063.

Jaworski, Eugene: *See*—
Breslow, Jeffrey D.; and Jaworski, Eugene, 3,892,087.

Jenkins, Victor Frederick: *See*—
Sampson, Keith George; Jenkins, Victor Frederick; and Bunker, Anthony John, 3,892,714.

Jensen, Arne, to Danfoss A/S. Converter for measured quantities. 3,893,192, Cl. 324-65.00R.

Jetzer Engineering AG: *See*—
Jetzer, Raimund, 3,892,706.

Jetzer, Raimund, to Jetzer Engineering AG. Method of processing refuse for conversion into shaped bodies. 3,892,706, Cl. 260-37.00R.

Jiu, James; and Mizuba, Seth S., to G. D. Searle & Co. Microbiological production of biologically active 8,8'-bi-1h-naphtho[2,3-c]Pyrans and products. 3,892,848, Cl. 424-115.000.

Johansson, Bjorn-Olow, to Alfa-Laval AB. Piston and cylinder apparatus arranged for cleaning. 3,892,166, Cl. 91-454.000.

Johansson, Karl Ingvar Georg, to Eriksson, Erik Gustav Lennart. Procedure for surface treatment of wood. 3,892,896, Cl. 427-392.000.

John, Chester H. Air channeling means. 3,892,438, Cl. 296-1.00S.

John Zink Company: *See*—
Reed, Robert D.; and McGill, Eugene C., 3,892,519.

Johnson, Anton E. Holder. 3,892,315, Cl. 211-71.000.

Johnson, Charles Louis; and Stuard, Charles Donald, to Procter & Gamble Company, The. Container subassembly having a membrane-type closure. 3,892,351, Cl. 229-43.000.

Johnson, Dwight N., to Singer Company, The. Inlet orifice device to control thruput flow for pressure regulators. 3,892,255, Cl. 137-116.500.

Johnson, Hugh B.: *See*—
McDonald, William S.; and Johnson, Hugh B., 3,892,613.

Johnson, Irvin D.: *See*—
Oleszko, Thaddeus J.; Kaufmann, Eduard P.; and Johnson, Irvin D., 3,892,633.

Johnson, John W., to Advanced Power Systems. Hydraulic drive. 3,892,283, Cl. 180-66.00R.

Johnson, Matthey & Co., Limited: *See*—
Hatswell, John Sidney; and Sloboda, Mieczyslaw Herman, 3,892,564.

Johnson Service Company: *See*—
Hilgert, Adolph J., 3,892,252.

Johnson, Stuart J., to Barber-Colman Company. Roughing hob. 3,892,022, Cl. 29-103.00B.

Johnston, Richard W.: *See*—
Preiser, Mark E.; Johnston, Richard W.; and Neuman, John G., 3,892,219.

Johnston, Thomas P.: *See*—
Piper, James R.; and Johnston, Thomas P., 3,892,824.

Johnstone, Bruce V., to Johnstone Engineering & Machine Company. Knife holders for slitter winding machines and the like. 3,892,156, Cl. 83-469.000.

Johnstone Engineering & Machine Company: *See*—
Johnstone, Bruce V., 3,892,156.

Jones, David Wilkes, to International Business Machines Corporation. Means and method of tape guide control with tape skew and lateral displacement corrections in a rotary head drum. 3,893,176, Cl. 360-70.000.

Jones, Franklin R.; and Ferguson, Robert D. Dental floss device. 3,892,249, Cl. 132-89.000.

Jones, Howard: *See*—
Shen, Tsung-Ying; Jones, Howard; and Mulvey, Dennis M., 3,892,769.

Jones, Richard F., to General Aquadyne, Inc. Diver's pressurized equipment housings. 3,892,234, Cl. 128-142.000.

Jordan, Graham William: *See*—
Hobday, Trevor Maurice Norwood; and Jordan, Graham William, 3,892,876.

Joseph Lucas (Industries) Limited: *See*—
Holdsworth, Martin Richard, 3,892,835.
Rohsler, Ivor Carl, 3,893,016.

Joslyn, Don C. Straticharge injector spark plug. 3,892,991, Cl. 313-138.000.

Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., to Texas Instruments Incorporated. High gain relays and systems. 3,893,055, Cl. 337-140.000.

Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel; and Muller, Pierre, to Recherches Pharmaceutiques et Scientifiques. Pharmaceutical compositions containing cysteine derivatives. 3,892,852, Cl. 424-180.000.

Juhasz, Mihaly: *See*—
Vladar, Janos; Vladar nee Szepes, Ilona; Juhasz, Mihaly; Vladar, Peter; and Vladar, Gabor, 3,892,586.

Junek, Jan: *See*—
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Cap, Antonin; Ripka, Josef; and Junek, Jan, 3,892,063.

Jureit, John Calvin; and Kushner, Benjamin H. Connector plate. 3,892,160, Cl. 85-13.000.

Kablaoui, Mahmoud S.; and Lachowicz, Donald R., to Texaco, Inc. Preparation of nitrocycloalkanones. 3,892,810, Cl. 260-586.00P.

Kabushiki Kaisha Tokyo Keiki: *See*—
Nirasawa, Tomiji; and Ota, Hiroshi, 3,893,117.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Araki, Eijiro; Mori, Mitsuo; and Morishita, Toshio, 3,892,064.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Kobayashi, Akira, 3,892,206.
Yamanaka, Teruo; and Sato, Kazuo, 3,893,114.

Kabushiki Kaisha Yashica: *See*—
Nagao, Takumi; and Sugano, Manabu, 3,892,354.

Kalinicheva, Nadezhda Andreevna: *See*—
Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.

Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to L'Oreal. Indamine salts. 3,892,749, Cl. 260-270.00H.

Kanai, Hiroyuki. Balloon control ring. 3,892,065, Cl. 57-108.000.

Kanai, Kenji; Sawai, Eisuke; and Nouchi, Norimoto, to Matsushita Electric Industrial Co., Ltd. Scanning magnetic head. 3,893,187, Cl. 360-115.000.

Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, to Hoechst Aktiengesellschaft. Builders for detergent and cleansing agents. 3,892,674, Cl. 252-96.000.

Kaneda, Kazuyoshi; Suzuki, Yasushi; and Wada, Kenji, to Riken Light Metal Industries Co., Ltd. Method for producing a colored oxide film on an aluminum or aluminum alloy. 3,892,636, Cl. 204-35.00N.

Kanegafuchi Boseki Kabushiki Kaisha: *See*—
Ishizawa, Kazutomo; Akashi, Takahuni; and Otake, Sadao, 3,893,010.

Kaneko, Yasuhisa: *See*—
Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, 3,892,907.

Kanemitsu, Tsunetoshi, to Taiyo Fishery Co., Ltd. Process for the preparation of feed for cultivating macrura. 3,892,866, Cl. 426-72.000.

Kanetsuki, Katsutoshi: *See*—
Matsumura, Yasuo; Maruyama, Kunio; Akiyama, Minoru; and Kanetsuki, Katsutoshi, 3,892,719.

Kanode, Albert E., to United States of America, Army. Comparator, optical inspection. 3,892,491, Cl. 356-168.000.

Kansai Paint Co., Ltd.: *See*—
Sagane, Masahiko, 3,892,585.

Kanzaki Paper Mfg. Co. Ltd.: *See*—
Shibata, Kazuo; and Matsushita, Takao, 3,892,887.

Kapfinger, Wolfgang: *See*—
Pallingen, Hans-G; Vinatzer, Alex; and Kapfinger, Wolfgang, 3,892,493.

Kaplan, Michael; and Davidson, Edmund Benjamin, to RCA Corporation. Electron beam recording media. 3,893,127, Cl. 346-1.000.

Karasa, Alvydas Petras: *See*—
Dwyer, John Robert, Jr.; Karasa, Alvydas Petras; Bell, Jonathan Durand; and Allen, James Lawson, 3,892,359.

Karls, Robert F.; and Enright, James H., to Emerson Electric Company. Compactor. 3,892,142, Cl. 74-521.000.

Kasahara, Koichi: *See*—
Sano, Shunichi; Kasahara, Koichi; Murphy, Harry C., Jr.; and Stauffer, Harry C., 3,893,174.

Kashiwai, Shinichi: *See*—
Naitou, Masanori; Nakano, Hiraku; Kashiwai, Shinichi; Satou, Chikara; and Utamura, Motoaki, 3,892,205.

Kashiwaya, Kentaro: *See*—
Uetani, Yoshio; Ikebata, Rokurou; Kashiwaya, Kentaro; Sugihara, Syoetsu; and Hisatomi, Kaoru, 3,892,591.

Kataoka, Toshiki: *See*—
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kato, Teiji; Tomoshige, Toru; Funakoshi, Katsumi; and Kobayashi, Toshio, 3,892,717.

Kathawala, Faizulla G.: *See*—
Hardtmann, Goetz E.; and Kathawala, Faizulla G., 3,892,860.

Kato, Shoichi: *See*—
Yamamoto, Hiroshi; Kato, Shoichi; Ohgushi, Koji; and Tokumitsu, Iwao, 3,892,864.

Kato, Teiji: *See*—
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kato, Teiji; Tomoshige, Toru; Funakoshi, Katsumi; and Kobayashi, Toshio, 3,892,717.

Kato, Tetsuji, to Mitsubishi Rayon Co., Ltd. System for cutting pieces from a traveling strip of sheet material. 3,892,153, Cl. 83-100.000.

Kato, Yomei: *See*—
Nishihara, Motohisa; and Kato, Yomei, 3,893,064.

Katsu, Mutsuo: *See*—
Izawa, Nobuharu; Katsu, Mutsuo; Murase, Yasuhiro; and Kondo, Takamitsu, 3,892,021.

Katsuhiko, Namura: *See*—
Uno, Naoyuki; and Katsuhiko, Namura, 3,893,141.

Katzer, John David: *See—*
McGrew, John P.; Foster, Larry W.; Katzer, John David; and Wilson, Ian S., 3,892,516.

Kaufmann, Eduard P.: *See—*
Oleszko, Thaddeus J.; Kaufmann, Eduard P.; and Johnson, Irvin D., 3,892,633.

Kaulen, Hans: *See—*
Bauer, Heinrich; Dorner, Karl-Heinz; Eberlin, Helmut; Kaulen, Hans; Pazurek, Werner; Richarz, Heinz; Taubman, Harro J.; and Wolf, Gerhard, 3,892,113.

Kawagoe, Hiroto, to Hitachi, Ltd. Set-preferring R-S flip-flop circuit. 3,892,985, Cl. 307-279.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Okuno, Ryuzo, 3,892,391.

Kay, Edward L.: *See—*
Lohr, Delmar F., Jr.; and Kay, Edward L., 3,892,693.

Kay Laboratories, Inc.: *See—*
Stanley, Joseph, Jr., 3,892,060.

Kay, Peter Dunlop: *See—*
Brook, David Whiteley; and Kay, Peter Dunlop, 3,892,791.

Kayatz, Karl-Heinz, to Claudius Peters AG. Method and apparatus for cooling. 3,892,044, Cl. 34-20.000.

Kayser, Detlev: *See—*
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, 3,892,770.

Kazan, John, to American Cyanamid Company. Method for preparing alkali salts of p-methylaminobenzoylglutamic acid. 3,892,801, Cl. 260-518.00R.

Keefe, George E.: *See—*
Almasi, George S.; and Keefe, George E., 3,893,089.

Keferstein, Horst, to Reifenhauser KG. Method of and apparatus for forming rolls of continuously supplied sheet material. 3,892,012, Cl. 242-56.00A.

Keith, Arlie L., to J & J Manufacturing Corporation. Electronic thermometer probe. 3,893,058, Cl. 338-28.000.

Keith, Marvin W., Jr., to Buehler Ltd. Automatic polishing apparatus. 3,892,092, Cl. 51-154.000.

Keller, Wolfgang; Kersting, Arno; and Reuschel, Konrad, to Siemens Aktiengesellschaft. Method for precipitating a layer of semiconductor material from a gaseous compound of said semiconductor material. 3,892,827, Cl. 264-81.000.

Kellner, Josef; and Kowalczyk, Hans, to Siemens Aktiengesellschaft. Digital phase control circuit. 3,893,170, Cl. 360-42.000.

Kendy, Leonard; and Frey, Richard L., to Hughes Aircraft Company. Laser-sight and computer for anti-aircraft gun fire control system. 3,892,466, Cl. 350-10.000.

Kenn, Robert Charles; and Tate, David Arthur, to Coal Industry (Patents) Limited. Drive arrangements for mining machines. 3,892,184, Cl. 104-147.00R.

Kenny, Neal S.: *See—*
Halaby, Sami A.; Kenny, Neal S.; and Murphy, James A., 3,892,888.

Kent, Allan R.: *See—*
Kotok, Alan; Kent, Allan R.; and Gross, David A., 3,893,084.

Kenyon, Ronald Wynford: *See—*
Clarke, Warwick Kingston; Kenyon, Ronald Wynford; and Robinson, David, 3,892,675.

Kersting, Arno: *See—*
Keller, Wolfgang; Kersting, Arno; and Reuschel, Konrad, 3,892,827.

Kessler, Arthur R., to Electro Devices, Inc. Flashing color sequence annunciator system with fail-safe features. 3,893,092, Cl. 340-213.100.

Keto, August I., to Westinghouse Electric Corp. Load-break connector. 3,892,461, Cl. 339-111.000.

Kewanee Oil Company: *See—*
Mitrofanov, Nicolas, 3,892,990.

Kezerian, Charles, to Stauffer Chemical Company. Substituted phosphorous containing alkyl thio methyl carboxylates. 3,892,694, Cl. 260-247.10P.

Khitrik, Spiridon Iosifovich: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.

Khokhar, Abdul Rauf: *See—*
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 3,892,790.

Khrustaleva, Taisiya Danilovna: *See—*
Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.

Kienzle Apparte GmbH: *See—*
Heindke, Armin; Mutz, Gerhard; Hirt, Albert; and Winkler, Werner, 3,892,175.

Kilburg, Ronald J., to Rucker Company, The. Mobile electrification conductor system. 3,892,299, Cl. 191-29.00R.

Killam, Oliver P. Modular shelf construction. 3,892,189, Cl. 108-109.000.

Kim-Eng, Edward: *See—*
Gold, Joseph; Kim-Eng, Edward; and Plante, Paul Emile, 3,893,191.

Kimbara, Motoyasu; and Yoshida, Yoshitaka, to Isuzu Motors Ltd. Construction arrangement of combustion chamber for use in direct fuel injection type diesel engine. 3,892,221, Cl. 123-32.0ST.

Kimbell, George H.: *See—*
Jacobson, Thor V.; and Kimbell, George H., 3,893,045.

King, Dwayne L. Flash extender and camera support. 3,893,145, Cl. 354-293.000.

King, Herbert R.: *See—*
Klein, Norman E.; and King, Herbert R., 3,892,109.

King, John A.; and Brown, Donald L., to Texas Instruments Incorporated. Variable power control adapter. 3,893,019, Cl. 323-19.000.

Kingsford, Ted I., to Plough, Inc. Eyelash-cosmetic applicator. 3,892,248, Cl. 132-88.700.

Kinney, Thomas D.; and Pickett, John E. P. Light microscopy processing apparatus. 3,892,197, Cl. 118-7.000.

Kireev, Ivan Nikitich: *See—*
Almen, Iosif Abramovich; Krasner, Efim Elevich; Dunaevsky, Vladimir Izrailevich; and Kireev, Ivan Nikitich, 3,892,152.

Kirk, Bradley S., to AIRCO, Inc. Multiple cycle process for wastewater purification. 3,892,659, Cl. 210-3.000.

Kirkegaard, John Kirk. Drum motor. 3,892,144, Cl. 74-805.000.

Kirkham, Anthony J.: *See—*
Baker, Lionel R.; Kirkham, Anthony J.; Martin, Stanley; Lobb, Daniel R.; and Rourke, Christopher P., 3,892,494.

Kister, Albert T., to Shell Oil Company. Process for oxychlorination of ethylene. 3,892,816, Cl. 260-659.00A.

Kitahara, Hisao: *See—*
Matsui, Hiroshi; Kitahara, Hisao; and Mihara, Tadashi, 3,893,195.

Kitamura, Takahiko: *See—*
Goto, Hachiro; Tanaka, Atsushi; Ilzuka, Shiho; and Kitamura, Takahiko, 3,892,820.

Klas, Harold W.: *See—*
Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., 3,893,063.

Klaver, Olof Erik Hans: *See—*
Bosselaar, Cornelis Albertus; Klaver, Olof Erik Hans; Verwey, Jan Florus; and Van Santen, Johannes Gerrit, 3,893,151.

Klayman, Arnold I.; and Genest, Leonard J., to Monitron Industries, Inc. Speaker enclosure. 3,892,288, Cl. 181-156.000.

Klee, David J.; and Howells, Roger A. Cryogenic freezer with variable speed gas control system. 3,892,104, Cl. 62-186.000.

Klein, Eberhard: *See—*
Claes, Frans Henri; Klein, Eberhard; Libeer, Marcel Jan; and Moisar, Erik, 3,892,574.

Klein, Norman E.; and King, Herbert R., to Deering Milliken Research Corporation. Jet dyeing and washing apparatus. 3,892,109, Cl. 68-205.00R.

Klein, Paul P. Roof construction. 3,892,899, Cl. 428-49.000.

Kleiner, Hans-Jerg; Schneider, Karl-Heinz; and Schneider, Gerhart, to Hoechst Aktiengesellschaft. Mercerizing solutions. 3,892,524, Cl. 8-127.000.

Kleister, Heinz; and Sommer, Walter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Pitman adjustable in length for a press with hydraulic overload safety mechanism. 3,892,143, Cl. 74-583.000.

Klimkovich, Nikolai Semenovich: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.

Klingler, Josef F. Pizza pie and method of forming the same. 3,892,868, Cl. 426-94.000.

Klushin, Nikolai Alexandrovich; Maslakov, Petr Avramovich; and Kotov, Vladimir Petrovich. Portable pneumatic impact tool. 3,892,280, Cl. 173-162.000.

Klutchko, Sylvester: *See—*
Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,892,739.

Knifton, John F., to Texaco Inc. Selective carboxylation process. 3,892,788, Cl. 260-410.90R.

Knudson, Kay L.: *See—*
Thorne, Gale H.; Wood, Orin Lew; and Knudson, Kay L., 3,892,628.

Knutzen, Ted H.: *See—*
Gunderlock, Richard P.; and Knutzen, Ted H., 3,892,497.

Kobayashi, Akira, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Combustion device for heat motors. 3,892,206, Cl. 123-8.090.

Kobayashi, Kazuhiko; and Oizumi, Toshiro, to Mitsubishi Denki Kabushiki Kaisha. Process for electrical discharge shaping and apparatus therefor utilizing different shape wave forms. 3,892,936, Cl. 219-69.00P.

Kobayashi, Makio: *See—*
Uchiyama, Hisashi; Meno, Naohiko; Senjo, Teizo; and Kobayashi, Makio, 3,892,837.

Kobayashi, Toshio: *See—*
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kato, Teiji; Tomoshige, Toru; Funakoshi, Katsumi; and Kobayashi, Toshio, 3,892,717.

Kobori, Rinei. Process and a device for butt jointing and assembling panels of a building. 3,892,098, Cl. 52-270.000.

Kobylinski, Joseph Anthony: *See—*
Hapeman, Martin Jay; and Kobylinski, Joseph Anthony, 3,892,300.

Kobzina, John W., to Chevron Research Company. 3,5-Dimethyl-2-thienyl-(n-haloalkylthiocarboxanilide) herbicides. 3,892,775, Cl. 260-332.20C.

Koch, John K. Back lighted panel. 3,892,080, Cl. 40-106.100.

Koetke, Klaus-Dieter: *See—*
Mehnert, Gottfried; and Koetke, Klaus-Dieter, 3,892,513.

Kogure, Yasuzi: *See—*
Matsui, Toru; Yoshizaki, Akira; and Kogure, Yasuzi, 3,893,135.

Kohan, Geza: *See—*
Podesva, Ctirad; Kohan, Geza; and Scott, William T., 3,892,802.

Kohke, Stephen J., to Thomas & Betts Corporation. Bundling strap with self-contained severing means. 3,892,011, Cl. 24-16.0PB.

Kohn, Herbert Dietrich August: *See—*
Bartels, Alfred Friedrich Adolf; Pinkerneil, Gunther Fritz August Heinrich; and Kohn, Herbert Dietrich August, 3,892,010.

Kokolis, Harry G.: *See—*
Kotos, Peter; and Kokolis, Harry G., 3,893,052.

Kolen, Eugene P.; and Golosinec, Olga C., to Kraftco Corporation. Emulsified oil dressing. 3,892,873, Cl. 426-602.000.

Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Lundberg, Robert Dean, to Union Carbide Corporation. Polyesters blended with cyclic ester polymers. 3,892,821, Cl. 260-860.000.

Kollmeyer, Willy D.; and Soloway, Samuel B., to Shell Oil Company. 1-(Phenylazo or substituted phenylazo)-2-imidazolidinones. 3,892,724, Cl. 260-140.000.

Kollmorgen Corporation: *See—*
Noodleman, Samuel, 3,892,987.

Kolm, Eric A. Acoustic activated switch. 3,892,920, Cl. 179-1.0VC.

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Kolster, Edward J.; Bushyhead, Jess C.; and Kolster, Harvey L., 3,892,450.

Komatsu, Akira: *See—*
Akutagawa, Susumo; Kumobayashi, Hidenori; and Komatsu, Akira, 3,892,817.

Komatsu, Yoshihiro; and Yamaguchi, Kanemichi, to Toyo Seikan Kaisha Limited. Process for the preparation of high-temperature short-time sterilized packaged articles. 3,892,058, Cl. 53-21.0FC.

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Izawa, Nobuharu; Katsu, Mutsuo; Murase, Yasuhiro; and Kondo, Takamitsu, 3,892,021.

Konishiroku Photo Industry Co., Ltd.: *See—*
Van der Winden, Johannes Bernardus, 3,892,176.

Koo, Bonny B. Putting practice green. 3,892,412, Cl. 273-176.00H.

Kooi, Else, to U.S. Philips Corporation. Method of manufacturing a semiconductor device. 3,892,033, Cl. 29-576.000.

Koppensteiner, Gunter: *See—*
Eckert, Hans-Werner; and Koppensteiner, Gunter, 3,892,806.

Kormer, Vitaly Abramovich: *See—*
Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.

Koshikawa, Koichi: *See—*
Takayanagi, Shinji; Sato, Hitoshi; and Koshikawa, Koichi, 3,892,914.

Koslowski, Manfred Gunter, to du Pont de Nemours, E. I., and Company. Preparing a textured yarn package, for dyeing. 3,892,020, Cl. 28-72.120.

Kosta, Peter L.: *See—*
Jacuzzi, Roy A.; and Kosta, Peter L., 3,892,498.

Kotera, Noboru: *See—*
Masujima, Kiyohiko; Kotera, Noboru; and Hitomi, Teiichi, 3,892,520.

Kotik, Viktor Gerasimovich: *See—*
Glazkov, Vsevolod Ivanovich; Kotik, Viktor Gerasimovich; and Gunin, German Mikhailovich, 3,893,026.

Kotok, Alan; Kent, Allan R.; and Gross, David A., to Digital Equipment Corporation. Memory access control system. 3,893,084, Cl. 340-172.500.

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Kotov, Vladimir Petrovich: *See—*
Klushin, Nikolai Alexandrovich; Maslakov, Petr Avramovich; and Kotov, Vladimir Petrovich, 3,892,280.

Kowalczyk, Hans: *See—*
Kellner, Josef; and Kowalczyk, Hans, 3,893,170.

Koyama, Seiji: *See—*
Ogawa, Kiyoshi; Koyama, Seiji; and Michihara, Takehiko, 3,892,342.

Koyanagi, Yukio: *See—*
Sakamoto, Yoichi; and Koyanagi, Yukio, 3,893,032.

Kraftco Corporation: *See—*
Kolen, Eugene P.; and Golosinec, Olga C., 3,892,873.

Kranenberg, Helmut, to Bethlehem Steel Corporation. As-worked, heat treated cold-workable hypoeutectoid steel. 3,892,602, Cl. 148-36.000.

Krasner, Efim Elevich: *See—*
Almen, Iosif Abramovich; Krasner, Efim Elevich; Dunaevsky, Vladimir Izrailevich; and Kireev, Ivan Nikitich, 3,892,152.

Krause, Richard P.; and Montgomery, Harry T., to Pennsylvania Engineering Corporation. Metallurgical vessel having restraining means. 3,892,394, Cl. 266-36.00P.

Krawiec, Zbigniew Apoloniusz: *See—*
Casterline, Russell Carson; Krawiec, Zbigniew Apoloniusz; and Peterson, Ralph Broman, 3,892,928.

Kraynak, Joseph Stephen; and Blumenfield, Arthur, to Dart Industries, Inc. Personalized computer printed hard covered book. 3,892,427, Cl. 281-15.00R.

Kreinheder, Donald E.: *See—*
Hudspeth, Thomas; Maguire, Walter W.; Rosen, Harold A.; and Kreinheder, Donald E., 3,893,116.

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Medovar, Boris Izrailevich; Kumysh, Iiya Iosifovich; Boiko, Georgy Alexandrovich; Rabinovich, Volf Iudovich; Sapozhnikov, Alexandr Ivanovich; Marinsky, Georgy Sergeevich; and Kriger, Jury Nikolaevich, 3,892,271.

Krings, Peter: *See—*
Schade, Wolfgang; Krings, Peter; and Batka, Heimold, 3,892,522.

Kronewitter, Rudolf: *See—*
Braess, Hans-Hermann; and Kronewitter, Rudolf, 3,892,284.

Kronn, Willem L., to Spin Physics, Inc. Magnetic record/reproduce head and manufacturing method therefor. 3,893,189, Cl. 360-127.000.

Kruckenberg, Perry Lester: *See—*
Anderson, Harold Elden; and Kruckenberg, Perry Lester, 3,892,208.

Kuhlmann, Ugine: *See—*
Cioccolani, Arnaldo, 3,892,540.

Kuhn, Gregory L., to Motorola, Inc. Method for filling grooves and moats used on semiconductor devices. 3,892,608, Cl. 148-188.000.

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Kulik, Herbert S.; and Schachter, Jacob. Sealed envelope examining device for detecting the presence of metal. 3,893,022, Cl. 324-41.000.

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Furukawa, Hikaru; Kumazawa, Shozo; and Wakayama, Noriyuki, 3,893,104.

Kumobayashi, Hidenori: *See—*
Akutagawa, Susumo; Kumobayashi, Hidenori; and Komatsu, Akira, 3,892,817.

Kumysh, Iiya Iosifovich: *See—*
Medovar, Boris Izrailevich; Kumysh, Iiya Iosifovich; Boiko, Georgy Alexandrovich; Rabinovich, Volf Iudovich; Sapozhnikov, Alexandr Ivanovich; Marinsky, Georgy Sergeevich; and Kriger, Jury Nikolaevich, 3,892,271.

Kunioka, Kazuo: *See—*
Yamada, Takeo; Kunioka, Kazuo; Sugiyama, Shunichi; and Teramoto, Toyokazu, 3,892,392.

Kuramoto, Nobuyuki: *See—*
Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, 3,892,688.
Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, 3,892,689.

Kuramoto, Yoshio: *See—*
Yata, Kintaro; and Kuramoto, Yoshio, 3,893,140.

Kurata, Kazuyuki: *See—*
Teramura, Satoshi; and Kurata, Kazuyuki, 3,893,083.

Kurozumi, Seizi; Toru, Takashi; and Ishimoto, Sachio, to Teijin Ltd. Process for preparing hydroxycyclopentenone derivatives using microorganisms. 3,892,630, Cl. 195-51.00R.

Kushlefsky, Bernard G.: *See—*
Gitlitz, Melvin H.; and Kushlefsky, Bernard G., 3,892,863.

Kushner, Benjamin H.: *See—*
Jureit, John Calvin; and Kushner, Benjamin H., 3,892,160.

La Precision Industrielle: *See—*
Lioux, Jean, 3,892,165.

Laboratoires Laroche Navarron: *See—*
Pinhas, Henri, 3,892,799.

Laboratorios Berenguer Beneyto S.A.: *See—*
Cobo Barrachina, Gonzalo, 3,892,728.

Lach, Ronald Louis; and Brier, William Jean, to Elec-Tro-Tec, Inc. Dispatching system circuit. 3,893,097, Cl. 340-286.000.

Lachowicz, Donald R.: *See—*
Kablaoui, Mahmoud S.; and Lachowicz, Donald R., 3,892,810.

Lacour, Bernard: *See—*
Godard, Bruno; Lacour, Bernard; and Michon, Maurice, 3,893,046.

Laczko, Robert P.: *See—*
Bell, James E.; and Laczko, Robert P., 3,892,595.

Lagow, Richard J.: *See—*
Adcock, James L.; and Lagow, Richard J., 3,892,839.

Lai, David Y. F.: *See—*
Borg, Richard J.; Lai, David Y. F.; Riley, Neil R.; and Wolfe, James R., 3,892,644.

Lainez, Lucien; Duiker, Fokke; Bayard, Joel; and Di Campli, Dominique, to Thompson-Brandt. Method of manufacturing electromechanical vibration pick-ups. 3,892,025, Cl. 29-169.500.

Laing, Nikolaus. Spherical plain bearing. 3,892,448, Cl. 308-230.000.

Laing, Virgil Lee: *See—*
Febvre, Paul F.; and Laing, Virgil Lee, 3,893,028.

Lainof, Kate C.: *See—*
Becker, Lester J., 3,892,167.

Lakah, Lucien: *See—*
Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel; and Muller, Pierre, 3,892,852.

Lambregts, Antonius A., to Boeing Company, The. Turbulence compensated throttle control system. 3,892,374, Cl. 244-77.00D.

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Landmark, Kenneth L.: *See—*
Waller, Gustav M.; and Landmark, Kenneth L., 3,892,093.

Lane, Byron D. Hanger. 3,892,378, Cl. 248-71.000.

Lane, Gordon John: *See—*
Worgan, Gordon Peter; and Lane, Gordon John, 3,892,099.

Lang, Irving M. Boat ladder. 3,892,290, Cl. 182-22.000.

Lange, Wilfried, to Dieter Haubold Industrielle Nagelgerate. Magazine strip for ornamental nail driving apparatus. 3,892,313, Cl. 206-346.000.

Lankard, John R.: *See—*
Hodgson, Rodney T.; Lankard, John R.; Sorokin, Peter P.; and Wynne, James J., 3,892,979.

La Point, Albert E., to La Point, Albert E. Method and apparatus for separating the constituents of lead-acid storage batteries. 3,892,563, Cl. 75-97.000.

Laporte Industries Limited: *See—*
Sampson, Keith George; Jenkins, Victor Frederick; and Bunker, Anthony John, 3,892,714.

Lardat, Claude, to Thomson-CSF. Acoustic surface wave transmission system. 3,893,047, Cl. 333-30.00R.

Lauff, Helmut F.: *See—*
Berndt, Walter; and Lauff, Helmut F., 3,892,318.

Laurent, Serge: *See—*
Cronenberger, Michel; Laurent, Serge; and Mallet, Maurice, 3,892,708.

Lazzarini, Donald J.; and Schultz, Lewis K., to International Business Machines Corporation. Process for selectively forming electrophoretic coatings on electrical contacts. 3,892,646, Cl. 204-181.000.

Lea, John D.; and Rand, George, to Sperry Rand Corporation. Hydrophone array. 3,893,065, Cl. 340-8.0MM.

Lea, Keith: *See—*
Hall, Russell George; and Lea, Keith, 3,892,035.

Leach, Jack; and Fash, William G., to Burlington Industries, Inc. Ballistic vest. 3,891,996, Cl. 2-2.500.

Leach, Jerry A.: *See—*
Vensel, Richard R.; and Leach, Jerry A., 3,893,029.

Leavenworth, Howard W., Jr.; Amey, Earle B.; Dunning, Beverly W., Jr.; Gabler, Robert C., Jr.; and Goldsmith, Carl E., to United States of America, Interior. Extraction of metal values from lateritic ores. 3,892,639, Cl. 204-105.00M.

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Adams, Herbert J. F.; Blair, Murray R., Jr.; Boyes, Robert N.; Lebeaux, Maxim I.; and Vassallo, Helen G., 3,892,847.

Lebrero Martinez, Isidoro. Vibrating roller. 3,892,496, Cl. 404-117.000.

Leclerc, Robert G.: *See—*
Burkus, John; Leclerc, Robert G.; and Esposito, Louis V., 3,892,713.

Leclercq, Gerard, to Societe Europeene de Propulsion. Process for plasma spraying fiber-reinforced thermosetting resin laminates. 3,892,883, Cl. 427-34.000.

Lee, Art, to General Electric Company. Annunciator circuit. 3,893,091, Cl. 340-213.100.

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Ho, Allen P.; and Lee, Hua-Tung, 3,893,080.

Lehle, Erhard. Heating timer for pulse welders. 3,892,941, Cl. 219-113.000.

Leibfried, Raymond T., to Hercules Incorporated. Hydrogenation of dmt process residue and distilled dmt process residue. 3,892,796, Cl. 260-468.00K.

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Lemke, Timothy Allen: *See—*
Dittmann, Larry Eugene; and Lemke, Timothy Allen, 3,892,459.

Lennox, William Murdoch, to National Research Development Corporation. Endoprosthetic shoulder joint. 3,891,998, Cl. 3-1.910.

Leo, Bruno S., to Hughes Aircraft Company. Vuilleumier refrigerator hot cylinder burner head. 3,892,102, Cl. 62-6.000.

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Letot, Incorporated: *See—*
Stankus, Robert W., 3,892,922.

Leveen, Harry H. Disposable plastic blood vessel clamp. 3,892,241, Cl. 128-325.000.

Lever Brothers Company: *See—*
Gutierrez, Eddie N.; and Reardon, Robert C., Jr., 3,892,787.
Parsons, Anthony Mesnard, 3,892,789.
Rapisarda, Anthony A.; Schoene, Kenneth F.; and Benken, William B., 3,892,669.
Wood, Francis William, 3,892,870.

Levine, Stuart A.; and Potts, Robert S., to Corning Glass Works. Apparatus for pH measurements. 3,892,652, Cl. 204-195.00R.

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Claes, Frans Henri; Klein, Eberhard; Libeer, Marcel Jan; and Moisar, Erik, 3,892,574.

Licencia Talalmanyokat Ertekesito Vallalat: *See—*
Vladar, Janos; Vladar nee Szepes, Ilona; Juhasz, Mihaly; Vladar, Peter; and Vladar, Gabor, 3,892,586.

Licentia-Patent-Verwaltungs-G.m.b.H.: *See—*
Botzenhardt, Leonhard, 3,893,160.
Kriechbaum, Karl; and Ahrens, Karl, 3,892,151.
Mroczek, Werner; and Wolf, Josef, 3,893,154.

Lieberman, Stuart I., to United States of America, Army. Matched MIC delay line transducer using a series array. 3,893,048, Cl. 333-30.00R.

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Lin, Frank W., to Qume Corporation. Stepping motor drive circuit. 3,893,012, Cl. 318-696.000.

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Lin, Paul T.: *See—*
Chappelow, Ronald E.; Doney, Donald A.; Doulin, Joseph; Lin, Paul T.; and Schiavone, Frank A., 3,892,606.

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Linder, Jerome, to Sandoz-Wander, Inc. 1-(M-trifluoromethylphenyl)-5-halopyridazones-(6) as sleep inducers. 3,892,859, Cl. 424-250.000.

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Lindquist, Robert H., to Chevron Research Company. Production of hydrocarbons from underground formations. 3,892,270, Cl. 166-251.000.

Lioux, Jean, to La Precision Industrielle. Rotary hydraulic jack device. 3,892,165, Cl. 91-420.000.

Lissant, Kenneth J., to Petrolite Corporation. Non-Newtonian nutritive compositions. 3,892,881, Cl. 426-602.000.

Lissatronic Corporation: *See—*
Lampkin, James G., 3,892,478.

Ljung, Torsten Nickolaus. Method for manufacturing multi-story housing with floor-slabs, bearing walls and partitions cast on the ground level. 3,892,055, Cl. 52-745.000.

Lobb, Daniel R.: *See—*
Baker, Lionel R.; Kirkham, Anthony J.; Martin, Stanley; Lobb, Daniel R.; and Rourke, Christopher P., 3,892,494.

Lockard, Joseph Larue, to AMP Incorporated. Miniature momentary rotary type switch for resetting electronic watch digital display. 3,892,931, Cl. 200-11.00R.

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Lonza Ltd.: *See—*
Garratt, Peter Garth; and Hoigne, Juerg, 3,892,884.

L'Oreal: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,892,749.

Lorkin, Clive Graham: *See—*
Schmidt, Dieter; Lorkin, Clive Graham; and Schiffarth, Josef, 3,892,886.

Lotspeich, James F., to Hughes Aircraft Company. Electro-optical variable focal length lens using optical ring polarizer. 3,892,469, Cl. 350-150.000.

Lotspeich, James F., to Hughes Aircraft Company. Optical device for transforming monochromatic linearly polarized light to ring polarized light. 3,892,470, Cl. 350-157.000.

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Jahnke, Richard William, 3,892,720.

Lucien, Rene. Electro-hydraulic servo-distributor. 3,892,260, Cl. 137-625.620.

Lundberg, Robert Dean: *See—*
Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Lundberg, Robert Dean, 3,892,821.

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Lynd, Anita Lynda Lucrece: *See—*
Humber, David Cedric; and Lynd, Anita Lynda Lucrece, 3,892,736.

Lyshkow, Norman A., to Combustion Equipment Associates Inc. Gas dilution apparatus. 3,892,549, Cl. 55-267.000.

M & T Chemicals Inc.: *See—*
Gitlitz, Melvin H., 3,892,862.
Gitlitz, Melvin H.; and Kushlefsky, Bernard G., 3,892,863.
Touval, Irving, 3,892,667.

Mabie, Curtis P., Jr., to American Dental Association. Adhesive refractory protective composition for investment casting. 3,892,579, Cl. 106-38.300.

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Maeda, Takuma: *See—*
Taniguchi, Hiroyoshi; Wakabayashi, Toshio; Maeda, Takuma; and Ishimoto, Kenzi, 3,892,114.

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Hattori, Masumi; and Maeda, Teizou, 3,892,833.

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Maguire, Walter W.: *See—*
Hudspeth, Thomas; Maguire, Walter W.; Rosen, Harold A.; and Kreinheder, Donald E., 3,893,116.

Mahoney, John F.: *See—*
Perel, Julius; and Mahoney, John F., 3,893,131.

Maillard, Gabriel: *See—*
Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel; and Muller, Pierre, 3,892,852.

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Malavazos, Gregory A., administrator: *See—*
Malavazos, Arthur J., deceased; Malavazos, Gregory A., administrator; and Urdal, Jan, 3,892,355.

Maldonado, Juan Ramon: *See—*
Coquin, Gerald Allan; Maldonado, Juan Ramon; and Maydan, Dan, 3,892,973.

Malinowski, Jordan Petrov: *See—*
Simeonov, Vasil Dragomirov; Mednikarov, Borislav Dimitrov; and Malinowski, Jordan Petrov, 3,892,571.

Mallet, Maurice: *See—*
Cronenberger, Michel; Laurent, Serge; and Mallet, Maurice, 3,892,708.

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Mangold, Dietrich: *See—*
Pommer, Ernst-Heinrich; Scheuerer, Guenter; Bolz, Gerhard; and Mangold, Dietrich, 3,892,861.

Mann, William C. Method of constructing a board-type fence. 3,892,056, Cl. 52-745.000.

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Mannesmann-Meer Aktiengesellschaft: *See—*
Snell, Donald Noel, 3,892,122.

Mansmann, Manfred: *See—*
Winter, Gerhard; Verbeek, Wolfgang; and Mansmann, Manfred, 3,892,583.

Marathon Oil Company: *See—*
Duke, Roy B., 3,892,783.
Oleszko, Thaddeus J.; Kaufmann, Eduard P.; and Johnson, Irvin D., 3,892,633.
Poettmann, Fred H., 3,892,252.

Marbach, Walter V.: *See—*
Sheridan, Arthur L.; and Marbach, Walter V., 3,892,869.

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Margraf, Adolf. Method of the removal of chemically active components from dust-laden gas streams. 3,892,543, Cl. 55-96.000.

Mariner, Charlie D.: *See—*
Shlesinger, Bernard Edward, Jr.; and Mariner, Charlie D., 3,893,051.

Marinsky, Georgy Sergeevich: *See—*
Medovar, Boris Izrailevich; Kumysh, Iiya Iosifovich; Boiko, Georgy Alexandrovich; Rabinovich, Volf Iudovich; Sapozhnikov, Alexandr Ivanovich; Marinsky, Georgy Sergeevich; and Kriger, Jury Nikolaevich, 3,892,271.

Mark Products, Inc.: *See—*
Saunders, Don A., 3,893,066.

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Marmarou, Anthony: *See—*
Coursin, David B.; and Marmarou, Anthony, 3,892,227.

Marquis, John C. Toothpick holder. 3,892,040, Cl. 32-40.00R.

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Corompt, Antoine, 3,892,323.

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Martin, Irving Edwin, to RCA Corporation. Multiple cell high frequency power semiconductor device having bond wires of differing inductance from cell to cell. 3,893,159, Cl. 357-70.000.

Martin, Lewis P.; and Trent, Lynn E., to GTE Automatic Electric Laboratories Incorporated. Axial component lead straightener. 3,892,263, Cl. 140-147.000.

Martin Marietta Corporation: *See—*
Blake, Floyd A., 3,892,433.

Martin, Stanley: *See—*
Baker, Lionel R.; Kirkham, Anthony J.; Martin, Stanley; Lobb, Daniel R.; and Rourke, Christopher P., 3,892,494.

Marton, Alejandro B.: *See—*
D'Antonio, Renato A.; and Marton, Alejandro B., 3,893,072.

Martucci, Theodore. Exercise device. 3,892,404, Cl. 272-79.00R.

Maruyama, Kunio: *See—*
Matsumura, Yasuo; Maruyama, Kunio; Akiyama, Minoru; and Kanetsuki, Katsutoshi, 3,892,719.

Marvin Glass & Associates: *See—*
Breslow, Jeffrey D.; and Jaworski, Eugene, 3,892,087.

Maschinenfabrik und Giesserei Netstal AG.: *See—*
Ruegg, Edwin, 3,892,509.

Mascioli, Rocco Lawrence: *See—*
Bechara, Ibrahim Selim; Carroll, Felix Patrick; and Mascioli, Rocco Lawrence, 3,892,687.

Maslakov, Petr Avramovich: *See—*
Klushin, Nikolai Alexandrovich; Maslakov, Petr Avramovich; and Kotov, Vladimir Petrovich, 3,892,280.

Mason, Robert L., to Raymond Lee Organization, Inc., The, a part interest. Vehicle alarm system. 3,893,069, Cl. 340-63.000.

Massachusetts Institute of Technology: *See—*
Adcock, James L.; and Lagow, Richard J., 3,892,839.
Houtsma, Adrianus J. M., 3,892,159.

Massey, Lester G.: *See—*
Punwani, Dharamvir; Massey, Lester G.; and Tarman, Paul B., 3,892,682.

Masso Remiro, Jose Ma. Quinohydrothermic body covering element. 3,892,239, Cl. 128-293.000.

Mastner, Jiri: *See—*
Iten, Paul D.; and Mastner, Jiri, 3,893,113.

Masujima, Kiyohiko; Kotera, Noboru; and Hitomi, Teiichi, to Dai Nippon Toryo Co., Ltd. Annealing oven for thermoluminescence dosimeter. 3,892,520, Cl. 432-225.000.

Matolcsy, Gyorgy; Bordas, Barna; Szatala, Odon; Andriska, Viktor; Grega, Erzsebet, nee Toth; Pinter, Zoltan; and Nagy, Sandor, to Eszakmagyarorszagi Vegyimuvek. Triazine compounds and herbicides containing the same, and a process for the preparation thereof. 3,892,747, Cl. 260-249.800.

Matson, Robert P. Structural panel joint. 3,892,054, Cl. 52-665.000.

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Matsui, Toru; Yoshizaki, Akira; and Kogure, Yasuzi, to Minolta Camera Kabushiki Kaisha. Apparatus for moving lens of camera for focusing. 3,893,135, Cl. 354-167.000.

Matsui, Toru: *See—*
Tsujimoto, Kayoshi; and Matsui, Toru, 3,893,133.

Matsumura, Yasuo; Maruyama, Kunio; Akiyama, Minoru; and Kanetsuki, Katsutoshi, to Japan Exlan Company Limited. Process for producing lactonized acrylic polymer products. 3,892,719, Cl. 260-79.3MU.

Matsushita Electric Industrial Co., Ltd.: *See—*
Fukuda, Masataro; and Iwaki, Tsutomu, 3,892,592.
Hattori, Masumi; and Maeda, Teizou, 3,892,833.
Ieki, Mitsuru; Inoue, Kenji; and Shimizu, Toshio, 3,892,593.
Kanai, Kenji; Sawai, Eisuke; and Nouchi, Norimoto, 3,893,187.
Matsui, Hiroshi; Kitahara, Hisao; and Mihara, Tadashi, 3,893,195.

Ota, Isao, 3,892,568.
Sakamoto, Yoichi; and Koyanagi, Yukio, 3,893,032.
Yoshii, Tetsuji, 3,893,186.

Matsushita, Takao: *See*—
Shibata, Kazuo; and Matsushita, Takao, 3,892,887.

Matsuura, Kazuo: *See*—
Abe, Jinnosuke; Watanabe, Tetsuo; Nagata, Akiho; Ando, Takuji; Take, Teruo; Izumi, Rokuro; Noda, Toshiharu; and Matsuura, Kazuo, 3,892,732.

Mattel, Inc.: *See*—
Gay, Derek J.; and Smedley, William H., 3,892,086.

Mattis, Donald J.: *See*—
Horwitt, Laurence G.; and Mattis, Donald J., 3,892,944.

Matzner, Eva: *See*—
Bjorklund, Fritz Lars Gunnar; and Matzner, Eva, 3,892,596.

Mauer, Russell E.: *See*—
Banford, John A.; Moyer, Ronald H.; and Mauer, Russell E., 3,892,238.

Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-ethyl-S-n-propyl-0-2-cyanovinyl-thionothiol-phosphoric acid esters. 3,892,823, Cl. 260-940.000.

May, Jack L.: *See*—
Majeau, Henrie L.; Heckt, Neil W.; and May, Jack L., 3,893,031.

Maydan, Dan: *See*—
Coquin, Gerald Allan; Maldonado, Juan Ramon; and Maydan, Dan, 3,892,973.

McBride, Lyle E., Jr.; and Bowman, William W., to Texas Instruments Incorporated. Internal combustion engine protection circuit. 3,893,108, Cl. 340-420.000.

McBride, Lyle E., Jr.: *See*—
Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., 3,893,055.

McCartney, John S.: *See*—
Gulati, Suresh T.; Hagy, Henry E.; and McCartney, John S., 3,892,537.

McClocklin, Samuel B., to Owatonna Tool Company. Rotary control valve. 3,892,259, Cl. 137-625.210.

McCulloch Corporation: *See*—
Anderson, Harold Elden; and Kruckenberg, Perry Lester, 3,892,208.

McDonal, Earl G., Jr.: *See*—
Marshall, John W.; McDonal, Earl G., Jr.; and Roath, Phillip B., 3,893,171.

McDonald, William S.; and Johnson, Hugh B., to International Paper Company. Method of making corrugated paperboard. 3,892,613, Cl. 156-210.000.

McGill, Eugene C.: *See*—
Reed, Robert D.; and McGill, Eugene C., 3,892,519.

McGrew, John P.; Foster, Larry W.; Katzer, John David; and Wilson, Ian S., to Span-Deck, Inc. Battery molding apparatus with trolley transporting means. 3,892,516, Cl. 425-443.000.

McKay, Alexander J.: *See*—
Prescott, Norman F.; and McKay, Alexander J., 3,892,381.

McKelvey, Harold E., to Shatterproof Glass Corporation. Oven doors. 3,892,223, Cl. 126-200.000.

McKelvey, Harold E., to Shatterproof Glass Corporation. Oven doors. 3,892,224, Cl. 126-200.000.

McKinley, Wayne A.; and Sarantakis, Dimitrios, to American Home Products Corporation. p-Glu-Trp-Ser-Tyr-D-Pgl-Leu-Arg-Pro-Gly-NH_2 and intermediates. 3,892,723, Cl. 260-112.500.

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Measurex Corporation: *See*—
Howarth, John J.; Grady, John K.; and Rice, David B., 3,892,967.

Mechtron International Corporation: *See*—
Hage, William T.; and Elliott, Emanuel J., 3,892,045.

Medley, Victor James, to P.M. Andersen Manufacturing Pty. Limited. Welding machine. 3,892,939, Cl. 219-101.000.

Mednikarov, Borislav Dimitrov: *See*—
Simeonov, Vasil Dragomirov; Mednikarov, Borislav Dimitrov; and Malinowski, Jordan Petrov, 3,892,571.

Medovar, Boris Izrailevich; Kumysh, Iiya Iosifovich; Boiko, Georgy Alexandrovich; Rabinovich, Volf Iudovich; Sapozhnikov, Alexandr Ivanovich; Marinsky, Georgy Sergeevich; and Kriger, Jury Nikolaevich. Mould for making an article with a branch pipe by the electroslag remelting process. 3,892,271, Cl. 164-252.000.

Meehan, Joseph G.: *See*—
Wass, James J.; and Meehan, Joseph G., 3,892,388.

Mees, Robert D.; Mittermaier, Armin F.; and Wilcox, Albert F., to Construction Materials Division, General Electric Company. Method and machine for forming laminations for use in self locking cores. 3,892,115, Cl. 72-294.000.

Mehnert, Gottfried; and Koetke, Klaus-Dieter, to Bekum Maschinenfabriken GmbH. Apparatus for making blow-molded containers having handles. 3,892,513, Cl. 425-302.00B.

Meier, Jean: *See*—
Allais, Andre; Meier, Jean; and Dube, Jacques, 3,892,773.

Meiley, Charles Laurie: *See*—
Fisk, Dale Edward; Homan, Merle Edward; Meiley, Charles Laurie; Reynolds, Zack Dwayne; Watkins, Robert Vernon; and Wiedmer, Fritz S., 3,892,925.

Meiser, Werner: *See*—
Metzger, Carl; Meiser, Werner; Buchel, Karl Heinz; and Plempel, Manfred, 3,892,764.

Melby, Allan L.: *See*—
Billigmeier, James E.; Melby, Allan L.; Peerman, Dwight E.; and Roesler, Richard R., 3,892,785.

Mena Sanchez, Luis-Martin: *See*—
Arias Carvajal, Jose Antonio; and Mena Sanchez, Luis-Martin, 3,892,727.

Meno, Naohiko: *See*—
Uchiyama, Hisashi; Meno, Naohiko; Senjo, Teizo; and Kobayashi, Makio, 3,892,837.

Menzel, Klaus, to Bendix Corporation, The. Transfer bar drive mechanism. 3,892,137, Cl. 74-99.00R.

Merck & Co., Inc.: *See*—
Baldwin, John J.; and Novello, Frederick C., 3,892,762.
Midler, Michael, Jr., 3,892,539.
Novello, Frederick C., 3,892,738.
Novello, Frederick C., 3,892,858.
Shen, Tsung-Ying; Jones, Howard; and Mulvey, Dennis M., 3,892,769.
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,892,744.

Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, 3,892,770.

Merkenich, Karl: *See*—
Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, 3,892,674.

Merritt, Paul H.: *See*—
Miller, Kenneth J.; Merritt, Paul H.; and Fuller, Francis W., 3,892,119.

Merritt, Robert Bruce; and Hester, Norbert John, to General Electric Company. Monitoring apparatus for measuring particles suspended in liquid and for measuring the opacity of the liquid. 3,892,485, Cl. 356-103.000.

Messing, Ralph A., to Corning Glass Works. Method of making porous inorganic bodies. 3,892,580, Cl. 106-41.000.

Meth, Harry; and Greenberg, Allen A., to General Mills Fun Group, Inc. Toy extruder. 3,892,510, Cl. 425-173.000.

Metsugi, Yoshiaki: *See*—
Hirano, Kinichi; and Metsugi, Yoshiaki, 3,892,079.

Metzger, Carl; Meiser, Werner; Buchel, Karl Heinz; and Plempel, Manfred, to Farbenfabriken Bayer AG. Phenyl-imidazolyl-alkanyl derivatives, their production and use. 3,892,764, Cl. 260-309.000.

Meylan-Piguet, Marius, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Day-date watch correction means. 3,892,067, Cl. 58-58.000.

Micciche, Frank, to Micciche, Frank. Device for teaching. 3,892,050, Cl. 35-8.00R.

Micheron, Francois; and Bismuth, Guy, to Thomson-CSF S.C.P.I. Holographic systems for recording and reading out refractive index gratings within the body of a photosensitive electro-optical material. 3,892,465, Cl. 350-3.500.

Michigan Chemical Corporation: *See*—
Anderson, Arnold L.; and Nulph, Robert J., 3,892,710.
Anderson, Arnold L., 3,892,711.

Michihara, Takehiko: *See*—
Ogawa, Kiyoshi; Koyama, Seiji; and Michihara, Takehiko, 3,892,342.

Michon, Maurice: *See*—
Godard, Bruno; Lacour, Bernard; and Michon, Maurice, 3,893,046.

Microna Inc.: *See*—
Watkins, Boyd G., 3,892,066.

Midland-Ross Corporation: *See*—
Durling, Harold, 3,892,444.
Fathauer, Jack E., 3,892,436.
Lincoln, Joseph A.; and Riopelle, Joseph A., III, 3,892,597.

Midler, Michael, Jr., to Merck & Co., Inc. Process for production of crystals in fluidized bed crystallizers. 3,892,539, Cl. 23-301.00R.

Miers, Jackson C.: *See*—
Wagner, Joseph R.; Miers, Jackson C.; and Becker, Robert, 3,892,877.

Mihara, Tadashi: *See*—
Matsui, Hiroshi; Kitahara, Hisao; and Mihara, Tadashi, 3,893,195.

Miko, Stephen John, to Industrial High Pressure Systems Inc. Hydraulic cleaner for doors and the like. 3,892,250, Cl. 134-168.00R.

Milberger, Ernest C.: *See*—
Grasselli, Robert K.; Suresh, Dev. D.; and Milberger, Ernest C., 3,892,794.

Miles Laboratories, Inc.: *See*—
Hayao, Shin; Havera, Herbert John; and Strycker, Wallace Glenn, 3,892,748.

Militello, Vincent J. Metal decking punch and method. 3,892,029, Cl. 29-428.000.

Miller, Jaydee W., to Pyromet, Inc. Process for producing high purity silver. 3,892,562, Cl. 75-83.000.

Miller, Jeffrey Ellis, to RCA Corporation. Computer for threshold of tau. 3,893,112, Cl. 343-6.5LC.

Miller, Kenneth J.; Merritt, Paul H.; and Fuller, Francis W., to Caterpillar Tractor Co. Forming apparatus for sheet material. 3,892,119, Cl. 72-385.000.

Miller, Lewis J.; and Coleman, William H., to Westinghouse Electric Corp. Adjustable axial positioning device. 3,892,500, Cl. 415-219.00R.

Miller, Samuel E., to QST Industries, Inc. Synthetic down. 3,892,909, Cl. 428-371.000.

Miller, William R.: *See—*
Ring, John J.; and Miller, William R., 3,893,185.

Mills, Roy William: *See—*
Raphael, Ralph Alexander; Murray, Robert Douglas Hutton; and Mills, Roy William, 3,892,814.

Milross Controls, Inc.: *See—*
Tems, Adam, 3,892,312.

Mimik Limited: *See—*
Magor, Lincoln Stoddard, 3,892,164.

Minnesota Mining and Manufacturing Company: *See—*
Lovness, William R., 3,892,908.
Nelson, Norman E., 3,892,370.
Watts, Ronald E.; and Errede, Louis A., 3,892,575.

Minolta Camera Kabushiki Kaisha: *See—*
Matsui, Toru; Yoshizaki, Akira; and Kogure, Yasuzi, 3,893,135.
Tsujimoto, Kayoshi; and Matsui, Toru, 3,893,133.
Uetsuki, Toshio; Okajima, Mitsuo; and Yuasa, Yoshio, 3,892,490.
Yata, Kintaro; and Kuramoto, Yoshio, 3,893,140.

Mironoff, Nicolas, to Bovard & Cie. Electric discharge machining circuit incorporating means for pre-ignition of the discharge channel. 3,893,013, Cl. 320-1.000.

Misumi, Akira: *See—*
Watanabe, Kiyoshi; Misumi, Akira; Onodera, Takayoshi; and Sunahara, Kazuo, 3,892,890.

Mitchell, William, to Carlton & United Breweries Limited. Hop extracts. 3,892,808, Cl. 260-586.00D.

Mitrofanov, Nicolas, to Kewanee Oil Company. Bromine-quenched high temperature g-m tube with passivated cathode. 3,892,990, Cl. 313-93.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Ando, Shigeru; Tomishima, Kazunaru; and Nishikawa, Akira, 3,892,473.
Kobayashi, Kazuhiko; and Oizumi, Toshiro, 3,892,936.

Mitsubishi Rayon Co., Ltd.: *See—*
Higashimura, Einosuke; and Miura, Yasunobu, 3,892,704.
Kato, Tetsuji, 3,892,153.

Mitsui, Kazuhiko, to Olympus Optical Co., Ltd. Apparatus for adjusting the flexing of the bending section of an endoscope. 3,892,228, Cl. 128-4.000.

Mitsui Petrochemical Industries Ltd.: *See—*
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kato, Teiji; Tomoshige, Toru; Funakoshi, Katsumi; and Kobayashi, Toshio, 3,892,717.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Okubo, Ichiro; and Tsujimoto, Michihiro, 3,892,734.

Mittermaier, Armin F.: *See—*
Mees, Robert D.; Mittermaier, Armin F.; and Wilcox, Albert F., 3,892,115.

Miura, Yasunobu: *See—*
Higashimura, Einosuke; and Miura, Yasunobu, 3,892,704.

Miyahara, Hiromitsu: *See—*
Takahashi, Noriyuki; Miyahara, Hiromitsu; and Inoue, Hidehiko, 3,892,424.

Miyahara, Kingo, to Dowa Co., Ltd. Liquid fuel burner for burning liquid fuel in gasified form. 3,892,518, Cl. 431-168.000.

Miyashita, Satoshi: *See—*
Iwagami, Masao; and Miyashita, Satoshi, 3,892,332.

Mizuba, Seth S.: *See—*
Jiu, James; and Mizuba, Seth S., 3,892,848.

Mizusawa Kagaku Kogyo Kabushiki Kaishi: *See—*
Sugahara, Yujiro; Noshi, Yoshibumi; and Naito, Hiroyuki, 3,892,577.

Mocarski, Zenon R., to S.R.C. Laboratories, Inc. Two stage nozzle. 3,892,361, Cl. 239-432.000.

Mogi, Takao; and Okada, Hisao, to Sony Corporation. Remote control system utilizing signal frequency sequence. 3,893,074, Cl. 340-171.0PF.

Moisar, Erik: *See—*
Claes, Frans Henri; Klein, Eberhard; Libeer, Marcel Jan; and Moisar, Erik, 3,892,574.

Molins Machine Company, Inc.: *See—*
Grobman, William, 3,892,168.

Molzen, Walter W., Jr.: *See—*
Cuomo, Jerome J.; and Molzen, Walter W., Jr., 3,892,650.

Monaghan, George J., to Carborundum Company, The. Lining for high temperature furnaces. 3,892,396, Cl. 266-43.000.

Monahan, Alan R., to Xerox Corporation. Light activating imaging process. 3,892,180, Cl. 101-456.000.

Monahan, Alan R., to Xerox Corporation. Light activating imaging process. 3,892,570, Cl. 96-67.000.

Monarch Marking Systems, Inc.: *See—*
Smith, Thomas M., 3,892,901.

Monitron Industries, Inc.: *See—*
Klayman, Arnold I.; and Genest, Leonard J., 3,892,288.

Monno, Bernd: *See—*
Biermann, Manfred; Brauer, Bernd; Heidborn, Wolfgang; Monno, Bernd; and Thiessen, Klaus, 3,892,471.

Montel, Gilbert, to Agence Nationale de Valorisation de la Recherche "Anvar". Distance measuring apparatus integrated in an aircraft landing system of the ILS type. 3,893,119, Cl. 343-108.00R.

Montgomery, Harry T.: *See—*
Krause, Richard P.; and Montgomery, Harry T., 3,892,394.

Montgomery, Stewart R.; and Cheavens, Thomas H., to W. R. Grace & Co. Method for oxidizing o-xylene to phthalic anhydride. 3,892,781, Cl. 260-346.400.

Montour, James L.; and Montour, Wilfred N. Landing pad. 3,892,402, Cl. 272-59.00C.

Montour, Wilfred N.: *See—*
Montour, James L.; and Montour, Wilfred N., 3,892,402.

Moore, Benjamin T. Boat trailer with multiple rocking boom suspension. 3,892,320, Cl. 214-84.000.

Morgan Construction Company: *See—*
Rich, Charles A., Jr., 3,892,446.

Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kato, Teiji; Tomoshige, Toru; Funakoshi, Katsumi; and Kobayashi, Toshio, to Mitsui Petrochemical Industries Ltd. Process for producing maleic acid modified polymerized ethylene wax. 3,892,717, Cl. 260-78.40D.

Mori, Kazumasa, to Nippondenso Co., Ltd. Vehicle starter protective system. 3,893,007, Cl. 317-9.00B.

Mori, Mitsuo: *See—*
Araki, Eijiro; Mori, Mitsuo; and Morishita, Toshio, 3,892,064.

Morimoto, Akira: *See—*
Ochiai, Michihiko; Aki, Osami; Morimoto, Akira; and Okada, Taiiti, 3,892,737.

Morisawa, Yasuhiro: *See—*
Tomita, Kazuo; Murakami, Tadashi; Takagi, Hiromu; and Morisawa, Yasuhiro, 3,892,745.

Morishita, Toshio: *See—*
Araki, Eijiro; Mori, Mitsuo; and Morishita, Toshio, 3,892,064.

Mormile, Wayne T.: *See—*
Pipes, George R.; Peppers, James D.; and Mormile, Wayne T., 3,892,186.

Morrell, Albert Maxwell; Barkow, William Henry; and Gross, Josef, to RCA Corporation. Self-converging color television display system. 3,892,996, Cl. 313-413.000.

Morris, Adele Patricia: *See—*
Charlesby, Arthur; Fydelor, Peter John; and Morris, Adele Patricia, 3,892,594.

Morse, Peter. Soft liner for bathtubs. 3,892,000, Cl. 4-185.00F.

Mosler Safe Company, The: *See—*
Hauber, Werner, 3,892,372.

Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, to Tokuyama Soda Kabushiki Kaisha. N-thiocarbamoyl-polyalkylenepolyamine group containing heavy metal adsorbing resins. 3,892,688, Cl. 260-2.20R.

Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, to Tokuyama Soda Kabushiki Kaisha. Thioureido heavy metal adsorbing resins. 3,892,689, Cl. 260-2.20R.

Motorola, Inc.: *See—*
Bray, Derek, 3,893,049.
Grenon, Lawrence A., 3,893,149.
Kuhn, Gregory L., 3,892,608.
Lincoln, Milan L., 3,893,158.
Marley, Robert R., 3,893,018.

Moyer, Ronald H.: *See—*
Banford, John A.; Moyer, Ronald H.; and Mauer, Russell E., 3,892,238.

Mroczek, Werner; and Wolf, Josef, to Licentia Patent-Verwaltungs-G.m.b.H. Semiconductor arrangement with current stabilizing resistance. 3,893,154, Cl. 357-35.000.

Mueller, William A.: *See—*
Swidler, Ronald; Sanderson, William A.; and Mueller, William A., 3,892,906.

Muhler, Joseph C.; and Alexander, Howard R. Prophylactic dental compositions. 3,892,843, Cl. 424-52.000.

Mukoyama, Ryuzo: *See—*
Ando, Kunio; and Mukoyama, Ryuzo, 3,893,136.

Muller, Pierre: *See—*
Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel; and Muller, Pierre, 3,892,852.

Muller-Scherak, Wolf Georg. Apparatus for drying clothes. 3,892,047, Cl. 34-103.000.

Mulvey, Dennis M.: *See—*
Shen, Tsung-Ying; Jones, Howard; and Mulvey, Dennis M., 3,892,769.
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,892,744.

Muntz, Eric P.; and Welkowsky, Murray S., to Xonics, Inc. Insulating electrode for breakdown inhibition in electronradiography imaging chamber. 3,892,964, Cl. 250-315.000.

Murakami, Hajime, to Alps Motorola, Inc. Instant stop device for a tape player-recorder. 3,893,183, Cl. 360-93.000.

Murakami, Tadashi: *See—*
Tomita, Kazuo; Murakami, Tadashi; Takagi, Hiromu; and Morisawa, Yasuhiro, 3,892,745.

Murase, Yasuhiro: *See—*
Izawa, Nobuharu; Katsu, Mutsuo; Murase, Yasuhiro; and Kondo, Takamitsu, 3,892,021.

Murphy, Guy C.: *See—*
Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., 3,892,612.

Murphy, Harry C., Jr.: *See—*
Sano, Shunichi; Kasahara, Koichi; Murphy, Harry C., Jr.; and Stauffer, Harry C., 3,893,174.

Murphy, James A.: *See*—
Halaby, Sami A.; Kenny, Neal S.; and Murphy, James A., 3,892,888.
Murray, Robert Douglas Hutton: *See*—
Raphael, Ralph Alexander; Murray, Robert Douglas Hutton; and Mills, Roy William, 3,892,814.
Mutz, Gerhard: *See*—
Heindke, Armin; Mutz, Gerhard; Hirt, Albert; and Winkler, Werner, 3,892,175.
Myers, Edward B., to Honeywell Inc. Double seated cage valve with flexible plug seat. 3,892,384, Cl. 251-282.000.
Myren, Rune L., to Svenska Dataregister AB. Method and a system for checking the accuracy of information derived from an encoded carrier member. 3,893,077, Cl. 340-146.10R.
N L Industries, Incorporated: *See*—
Foerster, George S.; and Statham, Charles D., 3,892,565.
N. V. Bekaert S.A.: *See*—
Contastin, Andre, 3,892,389.
N.V. Industrieele Handelscombinatie Holland: *See*—
van der Gaag, Cornelis, 3,892,430.
Naber, Jaap E.; and Dautzenberg, Frits M., to Shell Oil Company. Process for regeneration of sulfur oxide acceptors. 3,892,677, Cl. 252-411.00S.
Nachman, Joseph F.: *See*—
Compton, William A.; Nachman, Joseph F.; and Seegall, Manfred I., 3,892,836.
Nadelson, Jeffrey: *See*—
Houlihan, William J.; and Nadelson, Jeffrey, 3,892,752.
Nagao, Minoru: *See*—
Watanabe, Hiroo; and Nagao, Minoru, 3,893,067.
Nagao, Takumi; and Sugano, Manabu, to Kabushiki Kaisha Yashica. Film Counter Assembly. 3,892,354, Cl. 235-91.00C.
Nagasako, Isamu: *See*—
Anazawa, Shinzo; Ueno, Seiichi; and Nagasako, Isamu, 3,893,193.
Nagata, Akiho: *See*—
Abe, Jinnosuke; Watanabe, Tetsuo; Nagata, Akiho; Ando, Takuji; Take, Teruo; Izumi, Rokuro; Noda, Toshiharu; and Matsuura, Kazuo, 3,892,732.
Nagy, Sandor: *See*—
Matolcsy, Gyorgy; Bordas, Barna; Szatala, Odon; Andriska, Viktor; Grega, Erzsebet, nee Toth; Pinter, Zoltan; and Nagy, Sandor, 3,892,747.
Naito, Hiroyuki: *See*—
Sugahara, Yujiro; Noshi, Yoshibumi; and Naito, Hiroyuki, 3,892,577.
Naitou, Masanori; Nakano, Hiraku; Kashiwai, Shinichi; Satou, Chikara; and Utamura, Motoaki, to Hitachi, Ltd. Steam generator. 3,892,205, Cl. 122-32.000.
Najvar, Daniel J., to Dow Chemical Company, The. Impact resistant vinyl ester resin and process for making same. 3,892,819, Cl. 260-836.000.
Nakahara, Akihiko: *See*—
Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, 3,892,688.
Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, 3,892,689.
Nakamura, Ichiro: *See*—
Takenoshita, Mitsuaki; Fujisawa, Fumio; and Nakamura, Ichiro, 3,892,292.
Nakamura, Isa: *See*—
Okada, Takashi; and Nakamura, Isa, 3,892,983.
Nakano, Hiraku: *See*—
Naitou, Masanori; Nakano, Hiraku; Kashiwai, Shinichi; Satou, Chikara; and Utamura, Motoaki, 3,892,205.
Nanya, Takashi, to Nippon Electric Company, Limited. Asynchronous spatial shift register circuit. 3,893,086, Cl. 340-173.00R.
Nara, Hideo: *See*—
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kato, Teiji; Tomoshige, Toru; Funakoshi, Katsumi; and Kobayashi, Toshio, 3,892,717.
Narahara, Toshikazu: *See*—
Tanaka, Goro; and Narahara, Toshikazu, 3,892,643.
Naruse, Takeo; Hashimoto, Junichi; and Oikawa, Hideaki, to Pentel Kabushiki Kaisha. Push type mechanical pencil. 3,892,495, Cl. 401-65.000.
National Research Development Corporation: *See*—
Charlesby, Arthur; Fydelor, Peter John; and Morris, Adele Patricia, 3,892,594.
Lennox, William Murdoch, 3,891,998.
Raphael, Ralph Alexander; Murray, Robert Douglas Hutton; and Mills, Roy William, 3,892,814.
Nazzer, Don Barkley. Unitary stacked pressure tower. 3,892,825, Cl. 261-114.00R.
NCR Corporation: *See*—
Coffey, Donald E.; Harrington, Robert E.; and Felton, Jeffrey L., 3,892,309.
Nedelec, Lucien; and Frechet, Daniel, to Roussel Uclaf. Novel dibenzocycloheptenes. 3,892,756, Cl. 260-289.00C.
Neely, Homer E., Jr.: *See*—
Burgman, Jerome A.; Hunia, Edward M.; and Neely, Homer E., Jr., 3,892,581.
Neher A.G.: *See*—
Rohner, Benedikt, 3,892,348.
Nelson, Burke Edward, to Perkin-Elmer Corporation, The. Heat pipe lobar wicking arrangement. 3,892,273, Cl. 165-105.000.
Nelson, Milton E. Method of manufacturing lightweight dental drill for high-speed dental handpiece. 3,892,117, Cl. 72-367.000.
Nelson, Norman E., to Minnesota Mining and Manufacturing Company. Film spool. 3,892,370, Cl. 242-71.800.
Nermes, Esko Olavi; Talonen, Timo Tapani; and Aaltonen, Olavi August, to Outokumpu Oy. Process and device for flash smelting sulphide ores or concentrates. 3,892,560, Cl. 75-23.000.
Neufeld, Alonzo J. Method and apparatus for performing percutaneous bone surgery. 3,892,232, Cl. 128-92.0EB.
Neuman, John G.: *See*—
Preiser, Mark E.; Johnston, Richard W.; and Neuman, John G., 3,892,219.
Neumann, Charles G., to Reynolds Products Inc. Bin ice delivery mechanism. 3,892,337, Cl. 222-199.000.
Neuner, James A., to Westinghouse Electric Corp. Programmable, tester for protection and safeguards logic functions. 3,892,954, Cl. 235-153.0AC.
Neuner, James A.; and Boomgaard, Dirk J., to Westinghouse Electric Corporation. Position indication system. 3,893,090, Cl. 340-188.00R.
New Japan Chemical Co., Ltd.: *See*—
Sagane, Masahiko, 3,892,585.
Nicholls, Lawrence George, to Girling Limited. Telescopic suspension units. 3,892,397, Cl. 267-8.00R.
Nicholson Manufacturing Company: *See*—
Vanek, Stanley Donald, 3,892,265.
Nickel, Ardie R.; Rosenberg, Franklin J.; and Ackerman, James H., to Sterling Drug Inc. Trichloroamino (and acylamino)phenylalkanoic acids and esters thereof. 3,892,800, Cl. 260-518.00A.
Nieminski, Robert A., to Eaton Corporation. Dead-man parking brake. 3,892,294, Cl. 188-109.000.
Nihon Denshi Kabushiki Kaisha: *See*—
Takayanagi, Shinji; Sato, Hitoshi; and Koshikawa, Koichi, 3,892,914.
Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Reinforced refractory heat-insulator. 3,892,907, Cl. 428-303.000.
Nilsson, Hans Arne Ingvar, to Saab-Scania Aktiebolag. Optical weapon sight having controlled universally moveable mirror. 3,892,474, Cl. 356-252.000.
Nippon Crucible Co., Ltd.: *See*—
Takeda, Kenzo; Takahashi, Kazuhiko; and Shiraishi, Kunihiko, 3,892,584.
Nippon Electric Company, Limited: *See*—
Anazawa, Shinzo; Ueno, Seiichi; and Nagasako, Isamu, 3,893,193.
Isono, Tomoyuki; and Ohmiya, Tetsuo, 3,893,001.
Nanya, Takashi, 3,893,086.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Sotome, Hiromi, 3,892,917.
Nippon Kayaku Co., Ltd.: *See*—
Yamamoto, Hiroshi; Kato, Shoichi; Ohgushi, Koji; and Tokumitsu, Iwao, 3,892,864.
Nippon Kokan Kabushiki Kaisha: *See*—
Yamada, Takeo; Kunioka, Kazuo; Sugiyama, Shunichi; and Teramoto, Toyokazu, 3,892,392.
Nippon Soda Company, Limited: *See*—
Oda, Nakaaki; Iwasa, Shozo; Idohara, Mitsuru; Horie, Yoshio; Fukui, Takeo; and Takasaka, Naomichi, 3,892,709.
Nippondenso Co., Ltd.: *See*—
Mori, Kazumasa, 3,893,007.
Shibata, Akira; and Okamoto, Atutoshi, 3,892,952.
Nirasawa, Tomiji; and Ota, Hiroshi, to Kabushiki Kaisha Tokyo Keiki. Marine radar transmission and reception system. 3,893,117, Cl. 343-17.10R.
Nishihara, Motohisa; and Kato, Yomei, to Hitachi, Ltd. Signal discriminating device. 3,893,064, Cl. 340-6.00R.
Nishikawa, Akira: *See*—
Ando, Shigeru; Tomishima, Kazunaru; and Nishikawa, Akira, 3,892,473.
Noda, Fumiyoshi: *See*—
Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, 3,892,907.
Noda, Toshiharu: *See*—
Abe, Jinnosuke; Watanabe, Tetsuo; Nagata, Akiho; Ando, Takuji; Take, Teruo; Izumi, Rokuro; Noda, Toshiharu; and Matsuura, Kazuo, 3,892,732.
Nolan, Josephine Cooley, to Raymond Lee Organization, Inc., The, a part interest. Button-type gripping device. 3,892,014, Cl. 24-103.000.
Noly, Jean, to Potain. Crane with folding mast and jib. 3,892,316, Cl. 212-46.00R.
Noodleman, Samuel, to Kollmorgen Corporation. Commutating method and apparatus for DC permanent magnet machines. 3,892,987, Cl. 310-46.000.
Nordischer Maschinenbau Rud. Baader: *See*—
Bartels, Alfred Friedrich Adolf; Pinkerneil, Gunther Fritz August Heinrich; and Kohn, Herbert Dietrich August, 3,892,010.
Nordson Corporation: *See*—
Algeri, Harvey R.; Bruening, Ralph G.; Sandorf, Robert E.; and Stillwell, Fred A., 3,893,006.
Tamny, Simon Z., 3,892,357.
Nordstrom, Erik Gustav Wendel. Apparatus for producing corrugated plastic pipe with holes in the pipe wall. 3,892,514, Cl. 425-308.000.
Northern Illinois Gas Company: *See*—
Browning, Charles A.; and Perrigo, Gilbert G., 3,893,130.

Noshi, Yoshibumi: *See—*
Sugahara, Yujiro; Noshi, Yoshibumi; and Naito, Hiroyuki, 3,892,577.

Nouchi, Norimoto: *See—*
Kanai, Kenji; Sawai, Eisuke; and Nouchi, Norimoto, 3,893,187.

Novak, James J.: *See—*
Troy, Walter C.; Novak, James J.; Costello, Richard C.; and Dearth, Raymond J., 3,892,272.

Novak, Phillip J. Single sheet paper slitter. 3,892,038, Cl. 30-294.000.

Novello, Frederick C., to Merck & Co., Inc. 7-Thiasubstituted-1,2,4-benzothiadiazine-1,1-dioxides and their salts. 3,892,738, Cl. 260-243.00D.

Novello, Frederick C., to Merck & Co., Inc. Method for lowering uric acid levels using 7-alkylsufonyl substituted benzothiadiazine-1,1-dioxides. 3,892,858, Cl. 424-246.000.

Novello, Frederick C.: *See—*
Baldwin, John J.; and Novello, Frederick C., 3,892,762.

Novikov, Anatoly Yakovlevich: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.

Nowak, Herbert: *See—*
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, 3,892,770.

Nowak, Walter J., to Veeder Industries, Inc. Pulse generator with asymmetrical multi-pole magnet. 3,893,059, Cl. 338-32.000.

Nozadze, Gennady Pavlovich: *See—*
Arakelov, Mikhail Alexandrovich; Gersamia, Eduard Galaktionovich; Zedgenidze, Tengiz Grigorievich; and Nozadze, Gennady Pavlovich, 3,892,034.

Nudelman, Sol: *See—*
Riedel, Harold R.; Scharnhorst, Kurt Peter; Nudelman, Sol; and Roehrig, Hans, 3,892,966.

Nulph, Robert J.: *See—*
Anderson, Arnold L.; and Nulph, Robert J., 3,892,710.

Nunogaki, Yoshiaki, to Sanki Engineering Ltd. Apparatus for use in measurement of thermal constant of materials. 3,892,125, Cl. 73-15.00A.

Nuovo Pignone, S.p.A.: *See—*
Antonelli, Attilio, 3,892,103.

Nusonics, Inc.: *See—*
Cirulis, Uldis; and Zacharias, Ellis M., Jr., 3,892,127.

Nussbaumer, Henri, to International Business Machines Corporation. Digital filter. 3,892,953, Cl. 235-152.000.

O.P.I. Textile: *See—*
Rose, Jacques H., 3,892,018.

Oberthur, Heinrich, to ITT Industries, Inc. Load-dependent brake pressure proportioning valve. 3,892,445, Cl. 303-22.00R.

Oceanography International Corporation: *See—*
Fredericks, Alan D., 3,892,528.

Ochiai, Michihiko; Aki, Osami; Morimoto, Akira; and Okada, Taiiti, to Takeda Chemical Industries, Ltd. Cephalosporins. 3,892,737, Cl. 260-243.00C.

Oda, Nakaaki; Iwasa, Shozo; Idohara, Mitsuru; Horie, Yoshio; Fukui, Takeo; and Takasaka, Naomichi, to Nippon Soda Company, Limited. Aldehyde-polyamine or aldehyde-polyamine- aromatic compound condensation resin adsorbent for heavy metals and heavy metallic compounds. 3,892,709, Cl. 260-39.00R.

Ogawa, Kiyoshi; Koyama, Seiji; and Michihara, Takehiko, to Teijin Ltd. Apparatus for making tubular knitted fabrics. 3,892,342, Cl. 223-57.000.

Ogiue, Katsumi, to Hitachi, Ltd. Complementary MIS integrated circuit device on insulating substrate. 3,893,155, Cl. 357-42.000.

Ohgushi, Koji: *See—*
Yamamoto, Hiroshi; Kato, Shoichi; Ohgushi, Koji; and Tokumitsu, Iwao, 3,892,864.

Ohmiya, Tetsuo: *See—*
Isono, Tomoyuki; and Ohmiya, Tetsuo, 3,893,001.

Oikawa, Hideaki: *See—*
Naruse, Takeo; Hashimoto, Junichi; and Oikawa, Hideaki, 3,892,495.

Oizumi, Toshiro: *See—*
Kobayashi, Kazuhiko; and Oizumi, Toshiro, 3,892,936.

Okada, Hisao: *See—*
Mogi, Takao; and Okada, Hisao, 3,893,074.

Okada, Ryuzo, to Fuji Xerox Co., Ltd. Exposure device for copying machine and the like. 3,892,480, Cl. 355-3.000.

Okada, Taiiti: *See—*
Ochiai, Michihiko; Aki, Osami; Morimoto, Akira; and Okada, Taiiti, 3,892,737.

Okada, Takashi; and Nakamura, Isa, to Sony Corporation. Switching circuit. 3,892,983, Cl. 307-254.000.

Okajima, Mitsuo: *See—*
Uetsuki, Toshio; Okajima, Mitsuo; and Yuasa, Yoshio, 3,892,490.

Okamoto, Atutoshi: *See—*
Shibata, Akira; and Okamoto, Atutoshi, 3,892,952.

Okubo, Ichiro; and Tsujimoto, Michihiro, to Mitsui Toatsu Chemicals, Incorporated. Novel anthraquino(3,2-d)oxazole dyes and coloring agents. 3,892,734, Cl. 260-240.00D.

Okuno, Ryuzo, to Kawasaki Jukogyo Kabushiki Kaisha. Cooling apparatus for steel ingots or blooms using high-speed jet streams. 3,892,391, Cl. 266-2.00A.

Oleszko, Thaddeus J.; Kaufmann, Eduard P.; and Johnson, Irvin D., to Marathon Oil Company. Coke cutting with aid of vibration detectors. 3,892,633, Cl. 201-2.000.

Olin Corporation: *See—*
Hooks, Haywood, Jr.; and Pitts, James J., 3,892,760.
Weisse, Guenter K., 3,892,699.

Olinkraft Inc.: *See—*
Sieffert, William G., 3,892,350.

Olstowski, Franciszek, to Dow Chemical Company, The. Rapid setting polyurethanes from diols and polyfunctional isocyanates. 3,892,705, Cl. 260-30.40N.

Olympus Optical Co., Ltd.: *See—*
Mitsui, Kazuhiko, 3,892,228.
Tsuboshima, Kosaku; and Orimo, Ryoichi, 3,892,484.

Omata, Katsuyoshi; and Sato, Nobuaki, to Sony Corporation. Automatic gain control circuit. 3,893,038, Cl. 330-124.00R.

Omnium Chimique Societe Anonyme: *See—*
Levy, Jean, 3,892,755.

Omnium de Prospective Industrielle, S.A.: *See—*
Dalle, Jean Paul, 3,892,521.

Omron Tateisi Electronics Co.: *See—*
Watanabe, Hiroo; and Nagao, Minoru, 3,893,067.

Onatsevich, Mikhail Alexandrovich. Electromagnet latching means for plunger. 3,893,053, Cl. 335-254.000.

Ondetti, Miguel Angel; Pluscec, Josip; and Sheehan, John T., to E. R. Squibb & Sons, Inc. Tyrosine-O-sulfate containing peptides. 3,892,726, Cl. 260-112.500.

Onodera, Takayoshi: *See—*
Watanabe, Kiyoshi; Misumi, Akira; Onodera, Takayoshi; and Sunahara, Kazuo, 3,892,890.

Oono, Hiroshi: *See—*
Endo, Hirotoshi; Oono, Hiroshi; and Oosaka, Shigenori, 3,893,129.

Oosaka, Shigenori: *See—*
Endo, Hirotoshi; Oono, Hiroshi; and Oosaka, Shigenori, 3,893,129.

Opti-Holding AG: *See—*
Dahlmann, Julius; and Volter, Gunter, 3,892,262.

Orban, Richard; Terry, Stephen C.; and Enea, Horace J. Method and apparatus for digital scan conversion. 3,893,075, Cl. 340-172.500.

Organon Teknika B.V.: *See—*
Van Assendelft, Leendert; Van Der Kloot, Jacob M.; Van 'T Sant, Antonie; and Spekle, Hendrikus J., 3,892,664.

Orimo, Ryoichi: *See—*
Tsuboshima, Kosaku; and Orimo, Ryoichi, 3,892,484.

Osterberg, Arnold Curtis: *See—*
Hofmann, Corris Mabelle; Osterberg, Arnold Curtis; Greenblatt, Eugene Newton; and Tedeschi, David Henry, 3,892,772.

Ota, Hiroshi: *See—*
Nirasawa, Tomiji; and Ota, Hiroshi, 3,893,117.

Ota, Isao, to Matsushita Electric Industrial Co., Ltd. Electrophoretic image reproduction process. 3,892,568, Cl. 96-1.300.

Otake, Sadao: *See—*
Ishizawa, Kazutomo; Akashi, Takahuni; and Otake, Sadao, 3,893,010.

Otala, Matti Niilo Tapani, to U.S. Philips Corporation. Magnetic bubble device for visualizing magnetic field patterns. 3,893,023, Cl. 324-43.00R.

Otis, Christopher A.: *See—*
Gomez, Richard T.; and Otis, Christopher A., 3,893,098.

Ott-A-Matic, Inc.: *See—*
Ott, Marinus G., 3,892,366.

Ott, Marinus G., to Ott-A-Matic, Inc. Armature winding machine forms. 3,892,366, Cl. 242-7.05B.

Oudenhoven, Martin S., to United States of America, Interior. Long shield mining method. 3,892,076, Cl. 61-35.000.

Outokumpu Oy: *See—*
Nermes, Esko Olavi; Talonen, Timo Tapani; and Aaltonen, Olavi August, 3,892,560.

Overbury, Francis Gile, to International Standard Electric Corporation. Doppler ils receiver. 3,893,118, Cl. 343-106.00D.

Owatonna Tool Company: *See—*
Andrist, Willard L.; and Anderson, Richard T., 3,892,385.
McClocklin, Samuel B., 3,892,259.

Owens-Illinois, Inc.: *See—*
Uhlig, Albert R., 3,892,829.

Owens, James Herbert, to RCA Corporation. Method of setting the 4.5 MHz trap in a television receiver. 3,892,913, Cl. 178-5.80R.

Oxy Metal Industries Corporation: *See—*
Stevens, Peter; and Deuber, John M., 3,892,638.

Oy Finnlines Ltd.: *See—*
Makinen, Pentti Vainamo, 3,892,437.

Oy Helo-Tehtaat-Helo Fact. Ltd.: *See—*
Rimmi, Pentti Ilmari, 3,892,946.

Oy Tampelle AB: *See—*
Asikainen, Niilo Klaervo, 3,892,163.

Oyama, Yoshishige, to Hitachi, Ltd. Fuel-air mixture heating device for internal combustion engines. 3,892,211, Cl. 123-122.00R.

P.H.C. Industries, Inc.: *See—*
Szabo, Marton J., 3,892,615.

P. Leiner & Sons (Wales) Limited: *See—*
Hobday, Trevor Maurice Norwood; and Jordan, Graham William, 3,892,876.

P.M. Andersen Manufacturing Pty. Limited: *See—*
Medley, Victor James, 3,892,939.

Pacheco, F.: *See—*
Pacheco, Francisco, 3,892,653.

Pacheco, Francisco, to Ebert, Michael; Clark, Patrick; Girone, Carmine Joseph; and Pacheco, F., part interest to each. Hydrogen generator. 3,892,653, Cl. 204-238.000.

Page, Derrick J.; and Roberts, John S., to Westinghouse Electric Corp. Light activated thyristor with high di/dt capability. 3,893,153, Cl. 357-38.000.

Paillard S.A.: *See—*
Ascoli, Enzo; Pidoux, Raymond; and Perdrix, Marc, 3,893,126.

Pallingen, Hans-G; Vinatzer, Alex; and Kapfinger, Wolfgang, to Durst Ag. Fabrik Fototechnischer Apparate Bozen. Light measuring process and apparatus. 3,892,493, Cl. 356-226.000.

Palumbo, Arnaldo. Voice for dolls or puppets, provided with an anchoring organ. 3,892,085, Cl. 46-180.000.

Panacek, Anton F. Vapor seal unit. 3,892,329, Cl. 220-85.0VR.

Pankov, Vasily Ivanovich: *See—*
Paton, Vladimir Evgenievich; Smolyarko, Vladimir Borisovich; Belfor, Mikhail Gdal Gershovich; Pichak, Vladimir Grigorievich; Savich, Igor Mavrikievich; Rybchenkov, Alexandr Grigorievich; Pankov, Vasily Ivanovich; and Ignatushenko, Arkady Anatolievich, 3,892,937.

Parascandola, Louis J.: *See—*
Thorington, Luke; and Parascandola, Louis J., 3,892,997.

Paredes, Candelario; and Horn, Robert, to Forney Engineering Company. Crane boom angle indication and warning system. 3,893,093, Cl. 340-267.00C.

Park, Charles Lanier. Surgical needle apparatus. 3,892,240, Cl. 128-339.000.

Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., to United States of America, Navy. Detection streamer. 3,893,063, Cl. 340-6.00R.

Parsons, Anthony Mesnard, to Lever Brothers Company. Process for the extraction of glyceride oils by selective solvents. 3,892,789, Cl. 260-428.500.

Parton, Brian, to Imperial Chemical Industries Limited. Reactive dyestuffs. 3,892,742, Cl. 260-246.00R.

Pass, Herbert A.; Gerber, Hans-Rudolf; and Green, David Howard, to Ciba-Geigy Corporation. Herbicidal agents. 3,892,555, Cl. 71-93.000.

Pastor, Gerald R.: *See—*
Wright, Charles H.; and Pastor, Gerald R., 3,892,654.

Patel, Arvin M.: *See—*
Bossen, Douglas C.; Hsiao, Mu-Yue; and Patel, Arvin M., 3,893,071.

Paton, Vladimir Evgenievich; Smolyarko, Vladimir Borisovich; Belfor, Mikhail Gdal Gershovich; Pichak, Vladimir Grigorievich; Savich, Igor Mavrikievich; Rybchenkov, Alexandr Grigorievich; Pankov, Vasily Ivanovich; and Ignatushenko, Arkady Anatolievich. Apparatus for underwater welding of metal structures. 3,892,937, Cl. 219-72.000.

Patterson, Joe G. Wall switch extension. 3,892,935, Cl. 200-331.000.

Patterson, John F., to United States of America, Energy Research and Development Administration. Radial blanket assembly orificing arrangement. 3,892,625, Cl. 176-50.000.

Patterson, Rowan W.: *See—*
Fox, Roy K. N.; and Patterson, Rowan W., 3,892,140.

Pazurek, Werner: *See—*
Bauer, Heinrich; Dorner, Karl-Heinz; Eberlin, Helmut; Kaulen, Hans; Pazurek, Werner; Richarz, Heinz; Taubman, Harro J.; and Wolf, Gerhard, 3,892,113.

Peabody, Ralph C., to Tennant Company. Power floor treating apparatus. 3,892,003, Cl. 15-49.00C.

Pearson, Grant Marshall: *See—*
Siviour, Neil Graham; Pearson, Grant Marshall; and Cullen, Geoffrey Victor, 3,892,661.

Peek, Hermanus Leonardus: *See—*
Eversteijn, Franciscus Cornelis; and Peek, Hermanus Leonardus, 3,892,607.

Peerman, Dwight E.: *See—*
Billigmeier, James E.; Melby, Allan L.; Peerman, Dwight E.; and Roesler, Richard R., 3,892,785.

Peilstocker, Gunter: *See—*
Cohnen, Wolfgang; and Peilstocker, Gunter, 3,892,889.

Pembroke, Richard W., to Telex Computer Products, Inc. Tape cleaner vacuum interlock. 3,892,007, Cl. 15-306.00A.

Pennsylvania Engineering Corporation: *See—*
Krause, Richard P.; and Montgomery, Harry T., 3,892,394.

Pentel Kabushiki Kaisha: *See—*
Naruse, Takeo; Hashimoto, Junichi; and Oikawa, Hideaki, 3,892,495.

Peppers, James D.: *See—*
Pipes, George R.; Peppers, James D.; and Mormile, Wayne T., 3,892,186.

Perdrix, Marc: *See—*
Ascoli, Enzo; Pidoux, Raymond; and Perdrix, Marc, 3,893,126.

Perel, Julius; and Mahoney, John F., to Xerox Corporation. Ink printer. 3,893,131, Cl. 346-140.000.

Perkin-Elmer Corporation, The: *See—*
Nelson, Burke Edward, 3,892,273.

Perrigo, Gilbert G.: *See—*
Browning, Charles A.; and Perrigo, Gilbert G., 3,893,130.

Perry, Roger L., to Gillette Company, The. Safety razor. 3,892,036, Cl. 30-62.000.

Persson, Karl Rune, to Sprinter Pack AB. Carton box. 3,892,349, Cl. 229-37.00R.

Pesak, Albert, Jr. Frictionally engageable heat sink for solid state devices. 3,893,161, Cl. 357-81.000.

Petersen, Walter Adrian: *See—*
Forbes Jones, Robin Mackay; and Petersen, Walter Adrian, 3,892,541.

Peterson, Carmen A. Release mechanism. 3,892,083, Cl. 43-43.110.

Peterson, Marvin A., to General Electric Company. Method of electrodepositing a polymer. 3,892,647, Cl. 204-181.000.

Peterson, Ralph Broman: *See—*
Casterline, Russell Carson; Krawiec, Zbigniew Apoloniusz; and Peterson, Ralph Broman, 3,892,928.

Petrolite Corporation: *See—*
Lissant, Kenneth J., 3,892,881.

Peyton, Phillip L.: *See—*
Williams, David W.; and Peyton, Phillip L., 3,893,147.

Pfizer Inc.: *See—*
Hetzel, Donald S.; and Torres, Anibal, 3,892,879.
Lombardino, Joseph G., 3,892,740.

Philippon, Paul H.: *See—*
Best, Howard S.; Bustraan, Daniel J.; and Philippon, Paul H., 3,892,333.

Phillips, Carroll D., to United States of America, Navy. Rotatable structures support method and means. 3,892,162, Cl. 89-1.815.

Phillips, Charles Edward, Jr.; and Wells, Thomas Robert, to Dayton-Walther Corporation. Landing gear with shaft detent clip retainer. 3,892,141, Cl. 74-475.000.

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Phillips, Joseph L.: *See—*
Champoux, Louis A.; Hill, Horace E.; and Phillips, Joseph L., 3,892,121.

Phillips Petroleum Company: *See—*
Hudson, Jimmie E.; and Snelson, Jimmy W., 3,892,830.
Pritchard, James E., 3,892,834.

Physik Instrumente (PI) GmbH: *See—*
Bardocz, Arpad, 3,892,475.

Picard, Roland: *See—*
Blattner, Karl; and Picard, Roland, 3,892,965.

Pichak, Vladimir Grigorievich: *See—*
Paton, Vladimir Evgenievich; Smolyarko, Vladimir Borisovich; Belfor, Mikhail Gdal Gershovich; Pichak, Vladimir Grigorievich; Savich, Igor Mavrikievich; Rybchenkov, Alexandr Grigorievich; Pankov, Vasily Ivanovich; and Ignatushenko, Arkady Anatolievich, 3,892,937.

Picker, Amos, to Raytheon Company. Method of forming silicon storage target. 3,892,454, Cl. 316-19.000.

Pickett, John E. P.: *See—*
Kinney, Thomas D.; and Pickett, John E. P., 3,892,197.

Pidoux, Raymond: *See—*
Ascoli, Enzo; Pidoux, Raymond; and Perdrix, Marc, 3,893,126.

Pietenpol, Kermit W., to Telex Communications, Inc. Cartridge latch. 3,892,345, Cl. 226-89.000.

Pinhas, Henri, to Laboratoires Laroche Navarron. Phenoxyalkylamines and their salts. 3,892,799, Cl. 260-501.180.

Pinkerneil, Gunther Fritz August Heinrich: *See—*
Bartels, Alfred Friedrich Adolf; Pinkerneil, Gunther Fritz August Heinrich; and Kohn, Herbert Dietrich August, 3,892,010.

Pinter, Zoltan: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Szatala, Odon; Andriska, Viktor; Grega, Erzsebet, nee Toth; Pinter, Zoltan; and Nagy, Sandor, 3,892,747.

Pioneer Electronic Corporation: *See—*
Ishigami, Toshio, 3,893,184.
Takahashi, Yoshio; Abe, Kunio; and Tanaka, Haruhiko, 3,892,415.

Piper, James R.; and Johnston, Thomas P., to Southern Research Institute. S-ω-(ω-aminoalkylamino)alkyl dihydrogen phosphorothioates. 3,892,824, Cl. 260-944.000.

Pipes, George R.; Peppers, James D.; and Mormile, Wayne T., to Eaton Corporation. Free and power conveyor system. 3,892,186, Cl. 104-249.000.

Pitts, James J.: *See—*
Hooks, Haywood, Jr.; and Pitts, James J., 3,892,760.

Plains Chemical Development Co.: *See—*
Budnick, Edward G., 3,892,676.

Plante, Paul Emile: *See—*
Gold, Joseph; Kim-Eng, Edward; and Plante, Paul Emile, 3,893,191.

Plantif, Bernard E.; and Hiss, Andre H., to Societe Nationale des Poudres et Explosifs. Pyrotechnic positioning device. 3,892,073, Cl. 60-635.000.

Platt, Eric G.: *See—*
Reines, Jose; Platt, Eric G.; White, Stanley E.; Corrado, Joseph M.; and Wawryszyn, Askold W., 3,893,024.

Platte, Howard J.: *See—*
White, James A.; Chesluk, Ralph P.; and Platte, Howard J., 3,892,670.

Plempel, Manfred: *See—*
Metzger, Carl; Meiser, Werner; Buchel, Karl Heinz; and Plempel, Manfred, 3,892,764.

Plosser, George G.: *See—*
Humphreys, Thomas G., Jr., 3,893,025.

Plough, Inc.: *See—*
Kingsford, Ted I., 3,892,248.

Pluscec, Josip: *See—*
Ondetti, Miguel Angel; Pluscec, Josip; and Sheehan, John T., 3,892,726.

Podesva, Ctirad; Kohan, Geza; and Scott, William T., to Delmar Chemicals Limited. Processes for making benzamide compounds. 3,892,802, Cl. 260-559.00S.

Poettmann, Fred H., to Marathon Oil Company. Micellar systems aid in pipelining viscous fluids. 3,892,252, Cl. 137-13.000.

Pogrzeba, Hans-Joachim: *See—*
Zimmerman, Fritz; and Pogrzeba, Hans-Joachim, 3,892,542.

Polaroid Corporation: *See—*
Land, Edwin H., 3,892,477.
Simon, Myron S., 3,892,778.

Poli, Valerio A. Cylinder locks. 3,892,110, Cl. 70-107.000.

Pollitzer, Ernest L.: *See—*
Germanas, Dalia; and Pollitzer, Ernest L., 3,892,683.

Pollowy, Richard F.: *See—*
Adair, William A.; and Pollowy, Richard F., 3,892,041.

Polti, Jean-Loup. Method of treatment of metal surfaces. 3,892,637, Cl. 204-37.00T.

Polygram GmbH: *See—*
Burkowitz, Peter Klaus, 3,892,921.

Pommer, Ernst-Heinrich; Scheuerer, Guenter; Bolz, Gerhard; and Mangold, Dietrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Synergistic fungicide of 2-(methoxycarbamoyl)-benzimidazole and in N-substituted phthalimide. 3,892,861, Cl. 424-273.000.

Porret, Daniel; and Habermeier, Jurgen, to Ciba-Geigy Corporation. Dialkoxyphosphonoalkyl derivatives of cyclic ureides. 3,892,765, Cl. 260-309.500.

Posey, Joe W.: *See—*
Hickling, Robert; Posey, Joe W.; and Wilken, Irvin D., 3,892,215.

Posnansky, Mario, to Haenni & Cie Aktiengesellschaft. Temperature sensing device. 3,892,129, Cl. 73-371.000.

Post Office, The: *See—*
Boulter, Richard Arnold, 3,892,916.

Potain: *See—*
Noly, Jean, 3,892,316.

Potts, Robert S.: *See—*
Levine, Stuart A.; and Potts, Robert S., 3,892,652.

Poukey, James W.: *See—*
Freeman, John R.; Poukey, James W.; Shope, Steven L.; and Yonas, Gerold, 3,892,970.

Powell, Leslie Vernon; and Edwards, Reginald Harold, to Dunlop Holdings Limited. Pneumatic tire. 3,892,269, Cl. 152-330.000.

Power Conversion, Inc.: *See—*
Rosansky, Martin G.; and Jagid, Bruce E., 3,892,589.

PPG Industries, Inc.: *See—*
Burgman, Jerome A.; Hunia, Edward M.; and Neely, Homer E., Jr., 3,892,581.
Dowbenko, Rostyslaw, 3,892,903.

Preco Industries, Ltd.: *See—*
Ilukowicz, Robert John, 3,892,902.

Preiser, Mark E.; Johnston, Richard W.; and Neuman, John G., to General Motors Corporation. Internal combustion engine ignition system. 3,892,219, Cl. 123-148.00E.

Prescott, Norman F.; and McKay, Alexander J., to Atwood & Morrill Co. Fail-safe valve. 3,892,381, Cl. 251-26.000.

Preud'Homme, Jean: *See—*
Mancy, Denise; Florent, Jean; and Preud'Homme, Jean, 3,892,849.

Prill, Robert S., to Singer Company, The. Electrical drift correction system. 3,893,103, Cl. 340-347.0CC.

Pritchard, Edward. Control of expansion ratio in rotary motors. 3,892,502, Cl. 418-15.000.

Pritchard, James E., to Phillips Petroleum Company. Surface active agent to reduce agglomeration in dry die-face pelletizing. 3,892,834, Cl. 264-142.000.

Procter & Gamble Company, The: *See—*
Benjamin, Lawrence; and Saylor, Jay Harold, 3,892,680.
Edwards, James Byrd; and Diehl, Francis Louvaine, 3,892,681.
Johnson, Charles Louis; and Stuard, Charles Donald, 3,892,351.
Logan, Ted J., 3,892,684.

Proctor, Ronald G.: *See—*
Hotchkiss, Manford D.; and Proctor, Ronald G., 3,892,330.

Producto Machine Company: *See—*
Smeets, Gerard Gaston Frans, 3,892,158.

Produits Chimiques Ugine Kuhlmann: *See—*
Stiot, Jean-Pierre Henri; and Brouard, Claude Marie Henri Emile, 3,892,725.

Prosser, Paul Edward: *See—*
Sheffield, David John; Prosser, Paul Edward; and Charman, Bernard William, 3,892,120.

Pugsley, Peter C., to Crosfield Electronics Limited. Colour correcting image reproducing methods and apparatus. 3,893,166, Cl. 358-80.000.

Pulles, Eduard J., to GTE Automatic Electric Laboratories Incorporated. Edge-lighted panel arrangement. 3,892,959, Cl. 240-1.0EL.

Pullman Incorporated: *See—*
Ferris, Ray L., 3,892,426.

Puna, Erich, to Brundell Och Jonsson AB. Method and means for removing surface material from trees. 3,892,266, Cl. 144-309.0AC.

Punwani, Dharamvir; Massey, Lester G.; and Tarman, Paul B., to Consolidated Natural Gas Service Co., Inc. Single reactor fluidized bed oxygen enrichment process and apparatus. 3,892,682, Cl. 252-186.000.

Purdue Research Foundation: *See—*
Sallay, Stephen I., 3,892,757.

Pusey, Michael Stanley, to Dunlop Limited. Polyurethane foams. 3,892,685, Cl. 260-2.5BB.

Pyromet, Inc.: *See—*
Miller, Jaydee W., 3,892,562.

QST Industries, Inc.: *See—*
Miller, Samuel E., 3,892,909.

Quaedvlieg, Mathieu: *See—*
Tamer, Ergun; Hendricks, Udo; and Quaedvlieg, Mathieu, 3,892,527.

Quarm, Thomas A. A., to Bechtel International Corporation. Submerged smelting. 3,892,559, Cl. 75-21.000.

Quast, Gilbert W., to Envirex Inc. Thickener with elevatable scraper and non-elevating skimmer. 3,892,666, Cl. 210-520.000.

Quinn, Robert W., to United States of America, Transportation. Statistical sound level analyzer. 3,892,133, Cl. 73-556.000.

Qume Corporation: *See—*
Lin, Frank W., 3,893,012.

Rabinovich, Volf Iudovich: *See—*
Medovar, Boris Izrailevich; Kumysh, Iiya Iosifovich; Boiko, Georgy Alexandrovich; Rabinovich, Volf Iudovich; Sapozhnikov, Alexandr Ivanovich; Marinsky, Georgy Sergeevich; and Kriger, Jury Nikolaevich, 3,892,271.

Radchenko, Ivan Ignatievich: *See—*
Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.

Radiofone Corporation: *See—*
Edwards, Robert; and Silberg, Paul A., 3,892,926.

Raedecke, Helmut, to Robert Bosch Fernsehanlagen GmbH. System for comb-filtering television signals. 3,893,164, Cl. 358-31.000.

Ragulina, Raisa Ivanovna: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.

Railco, Inc.: *See—*
Harmon, Paul G., 3,892,356.

Ramillon, Rene. Safety tow-end device for ski binding. 3,892,421, Cl. 280-11.35T.

Ramsauer, Larry R. Aquarium housing. 3,892,200, Cl. 119-5.000.

Rand, George: *See—*
Lea, John D.; and Rand, George, 3,893,065.

Ranks Hovis McDougall Limited: *See—*
Hobday, Trevor Maurice Norwood; and Jordan, Graham William, 3,892,876.

Ranner, Georg, to U.S. Philips Corporation. Supervision arrangement for a pulse code-modulation system. 3,892,923, Cl. 179-15.0BF.

Raphael, Ralph Alexander; Murray, Robert Douglas Hutton; and Mills, Roy William, to National Research Development Corporation. Cyclopropane derivatives. 3,892,814, Cl. 260-617.00R.

Rapisarda, Anthony A.; Schoene, Kenneth F.; and Benken, William B., to Lever Brothers Company. Clear fabric-softening composition. 3,892,669, Cl. 252-8.750.

Raty, Pertti Tapani. Baseball pitching machine. 3,892,217, Cl. 124-7.000.

Raymond Lee Organization, Inc., The: *See—*
Bell, Harold E., 3,892,243.
Mason, Robert L., 3,893,069.
Nolan, Josephine Cooley, 3,892,014.

Raytheon Company: *See—*
Clifford, Peter J., 3,893,076.
Picker, Amos, 3,892,454.
Reid, William R., 3,892,603.
Weil, Thomas A., 3,893,015.

RCA Corporation: *See—*
Bechly, Fred Lorin; and Young, Jing Jue, 3,893,168.
Dodson, George Bertram, III, 3,892,949.
Dodson, George Bertram, III, 3,892,950.
Goodman, Alvin Malcolm; and Breece, James Miklos, 3,892,891.
Kaplan, Michael; and Davidson, Edmund Benjamin, 3,893,127.
Martin, Irving Edwin, 3,893,159.
Miller, Jeffrey Ellis, 3,893,112.
Morrell, Albert Maxwell; Barkow, William Henry; and Gross, Josef, 3,892,996.
Owens, James Herbert, 3,892,913.

Reardon, Robert C., Jr.: *See—*
Gutierrez, Eddie N.; and Reardon, Robert C., Jr., 3,892,787.

Rebsamen, Albert; and Gubler, Paul, to Heberlein and Co. AG. Apparatus for introducing yarns into draw-texturing machines. 3,892,019, Cl. 28-1.200.

Recherches Pharmaceutiques et Scientifiques: *See—*
Joullie, Maurice; Lakah, Lucien; Maillard, Gabriel; and Muller, Pierre, 3,892,852.

Recordati SA: *See—*
Sianesi, Enrico, 3,892,759.
Redlich, George H.; and Alderman, Michael L., to Rohm and Haas Company. Bleaching of aldehyde-tanned leather with sodium borohydride. 3,892,523, Cl. 8-94.200.
Redmond, Glyn Beresford; Hill, Ernest John Harold; and Evans, Maurice James, to Dunlop Limited. Metal wire felt. 3,892,376, Cl. 245-6.000.
Reed, Robert D.; and McGill, Eugene C., to John Zink Company. Liquid bubble screen seal for controlling combustible gases. 3,892,519, Cl. 431-202.000.
Reese, Robert O., to Time Computer, Inc. Wristwatch analyzer. 3,892,124, Cl. 73-6.000.
Reggiani, S.p.A.: *See—*
Giani, Adolfo, 3,892,177.
Reichhold Chemicals, Inc.: *See—*
Chang, Yun Ger; and Bailey, Philip S., 3,892,811.
Reid, William R., to Raytheon Company. Method of making magnets. 3,892,603, Cl. 148-108.000.
Reidy, Regina. Sewing aid device for setting a sleeve in the armhole of a bodice. 3,892,340, Cl. 223-1.000.
Reifenhauser KG: *See—*
Keferstein, Horst, 3,892,012.
Reigel, James: *See—*
Dann, Fred M.; and Reigel, James, 3,892,506.
Reilly, Richard Joseph: *See—*
Van Amerongen, Edward; Beall, Glenn Lee; Clark, John Charles; and Reilly, Richard Joseph, 3,892,235.
Reines, Jose; Platt, Eric G.; White, Stanley E.; Corrado, Joseph M.; and Wawryszyn, Askold W., to International Telephone and Telegraph Corporation. Method and apparatus for fault testing multiple stage networks. 3,893,024, Cl. 324-51.000.
Renn, John: *See—*
Ellefson, Larry P.; and Renn, John, 3,892,974.
Repco Research Proprietary Limited: *See—*
Brock, Alan J.; and Brock, John D., 3,892,566.
Respiratory Care, Inc.: *See—*
Van Amerongen, Edward; Beall, Glenn Lee; Clark, John Charles; and Reilly, Richard Joseph, 3,892,235.
Reti, Adrian R.: *See—*
Ehrreich, John E.; and Reti, Adrian R., 3,892,673.
Reuschel, Konrad: *See—*
Keller, Wolfgang; Kersting, Arno; and Reuschel, Konrad, 3,892,827.
Rexnord Inc.: *See—*
Schrader, Preston Henry, 3,892,308.
Reynolds Products Inc.: *See—*
Neumann, Charles G., 3,892,337.
Reynolds, Zack Dwayne: *See—*
Fisk, Dale Edward; Homan, Merle Edward; Meiley, Charles Laurie; Reynolds, Zack Dwayne; Watkins, Robert Vernon; and Wiedmer, Fritz S., 3,892,925.
Rhone-Poulenc, S.A.: *See—*
Bonin, Yves; and Robin, Jean, 3,892,715.
Cronenberger, Michel; Laurent, Serge; and Mallet, Maurice, 3,892,708.
Mancy, Denise; Florent, Jean; and Preud'Homme, Jean, 3,892,849.
Ricards, Charles Robert. Tissue dispenser. 3,892,368, Cl. 242-55.200.
Ricci, Louis N.: *See—*
Salvati, John G.; and Ricci, Louis N., 3,893,050.
Rice, David B.: *See—*
Howarth, John J.; Grady, John K.; and Rice, David B., 3,892,967.
Rich, Charles A., Jr., to Morgan Construction Company. Shaft seal. 3,892,446, Cl. 308-36.100.
Richards, Edward L.; and Cametti, George M., to Westinghouse Electric Corp. Auxiliary contact interlock for preventing electrical discontinuity between main bridging contact and fixed contacts. 3,892,934, Cl. 200-288.000.
Richardson-Merrell Inc.: *See—*
Hook, Robert H.; and Wright, George J., 3,892,776.
Richarz, Heinz: *See—*
Bauer, Heinrich; Dorner, Karl-Heinz; Eberlin, Helmut; Kaulen, Hans; Pazurek, Werner; Richarz, Heinz; Taubman, Harro J.; and Wolf, Gerhard, 3,892,113.
Richie, Edward H., to Industrial Development & Experimental Associates, Inc. Cable end stripping device. 3,892,145, Cl. 81-9.510.
Riebel, Hans-Jochem: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; and Hammann, Ingeborg, 3,892,823.
Riedel, Harold R.; Scharnhorst, Kurt Peter; Nudelman, Sol; and Roehrig, Hans, to United States of America, Navy. Infrared vidicon. 3,892,966, Cl. 250-333.000.
Ries, Herman E., Jr.: *See—*
Steigelmann, Edward F.; Ries, Herman E., Jr.; and Hughes, Robert D., 3,892,665.
Rietz Manufacturing Co.: *See—*
Hall, Howard W.; and Avilla, William A., 3,892,173.
Riis, Soren, to Seco Tools AB. Apparatus for separating condensation of wax from gas. 3,892,550, Cl. 55-269.000.
Riken Light Metal Industries Co., Ltd.: *See—*
Kaneda, Kazuyoshi; Suzuki, Yasushi; and Wada, Kenji, 3,892,636.
Riley, Neil R.: *See—*
Borg, Richard J.; Lai, David Y. F.; Riley, Neil R.; and Wolfe, James R., 3,892,644.
Rimmi, Pentti Ilmari, to Oy Helo-Tehtaat-Helo Fact. Ltd. Control system for an electrical heating device, and particularly for an electrical sauna stove. 3,892,946, Cl. 219-486.000.
Ring, John J.; and Miller, William R. Fluid biased head assembly. 3,893,185, Cl. 360-103.000.
Ringer, Kenneth M., to A.R.F. Products, Incorporated. Remote control system. 3,893,121, Cl. 343-225.000.
Riopelle, Joseph A., III: *See—*
Lincoln, Joseph A.; and Riopelle, Joseph A., III, 3,892,597.
Ripka, Josef: *See—*
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Cap, Antonin; Ripka, Josef; and Junek, Jan, 3,892,063.
Ripley, Gerald E.: *See—*
Frei, Karl; and Ripley, Gerald E., 3,892,301.
Riseman, Jacob, to International Business Machines Corporation. Novel beam lead integrated circuit structure and method for making the same including automatic registration of beam leads with corresponding dielectric substrate leads. 3,893,156, Cl. 357-67.000.
Rist, Michel, to Societe Anonyme Francaise du Ferodo. Vehicle disc clutch with plural release levers. 3,892,302, Cl. 192-91.00A.
Rittler, Hermann L., to Corning Glass Works. Process for making base metal titanate catalytic device. 3,892,897, Cl. 427-463.000.
Roath, Phillip B.: *See—*
Marshall, John W.; McDonal, Earl G., Jr.; and Roath, Phillip B., 3,893,171.
Robbins, Douglas Alan, to Control Data Corp. Power-up master clear control flip-flop. 3,893,190, Cl. 307-215.000.
Robert Bosch Fernsehanlagen GmbH: *See—*
Raedecke, Helmut, 3,893,164.
Robert Bosch G.m.b.H.: *See—*
Bauerlen, Hans, 3,893,128.
Roberts, John S.: *See—*
Page, Derrick J.; and Roberts, John S., 3,893,153.
Robertshaw Controls Company: *See—*
Bauer, Frederick T., 3,892,981.
Hendrick, Fred W., 3,892,258.
Robin, Jacques Andre; and Guyot, Michel Roger. Method of manufacture of tennis rackets of reinforced synthetic material. 3,892,831, Cl. 264-103.000.
Robin, Jean: *See—*
Bonin, Yves; and Robin, Jean, 3,892,715.
Robinson, David: *See—*
Clarke, Warwick Kingston; Kenyon, Ronald Wynford; and Robinson, David, 3,892,675.
Rocchitelli, Onofrio. Apparatus for locking and related releasing of closure devices of doors of machines, more particularly for washing machines. 3,892,933, Cl. 337-77.000.
Rockwell International Corporation: *See—*
Guderjahn, Charles A., 3,892,185.
Sarring, Ernest J., 3,892,319.
Roehm, Dan Christian. Method of controlling lipids in the bloodstream. 3,892,865, Cl. 424-325.000.
Roehrig, Hans: *See—*
Riedel, Harold R.; Scharnhorst, Kurt Peter; Nudelman, Sol; and Roehrig, Hans, 3,892,966.
Roeser, Helmut; Volker, Herbert; and Brand, Hans-Dieter, to Decatox, GmbH. Apparatus for the purification of waste gases from internal combustion engines. 3,892,536, Cl. 23-288.00F.
Roeshman, Benjamin. Paper board seat structure. 3,892,441, Cl. 297-461.000.
Roesler, Richard R.: *See—*
Billigmeier, James E.; Melby, Allan L.; Peerman, Dwight E.; and Roesler, Richard R., 3,892,785.
Rohe, Lothar: *See—*
Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lothar; and Hammann, Ingeborg, 3,892,823.
Rohm and Haas Company: *See—*
Redlich, George H.; and Alderman, Michael L., 3,892,523.
Simons, Robert W.; and Acree, William M., 3,892,627.
Rohner, Benedikt, to Neher A.G. Folding container. 3,892,348, Cl. 229-23.00R.
Rohsler, Ivor Carl, to Joseph Lucas (Industries) Limited. Thyristor chopper circuit. 3,893,016, Cl. 321-45.00C.
Rollins, William L. Loudspeaker. 3,892,289, Cl. 181-171.000.
Rolls-Royce (Composite Materials): *See—*
Worgan, Gordon Peter; and Lane, Gordon John, 3,892,099.
Romell, Dag. Method of rendering decay processes more effective. 3,892,660, Cl. 210-12.000.
Rosansky, Martin G.; and Jagid, Bruce E., to Power Conversion, Inc. Sealed battery construction. 3,892,589, Cl. 136-6.0LN.
Rose, Jacques H., to O.P.I. Textile. Device for the pneumatic squeezing of a continuously moving thread. 3,892,018, Cl. 28-62.000.
Rosen, Harold A.: *See—*
Hudspeth, Thomas; Maguire, Walter W.; Rosen, Harold A.; and Kreinheder, Donald E., 3,893,116.
Rosen, Irwin Charles. Urological irrigation-evacuator. 3,892,226, Cl. 128-2.00F.
Rosenberg, Franklin J.: *See—*
Nickel, Ardie R.; Rosenberg, Franklin J.; and Ackerman, James H., 3,892,800.
Rotaflex (Great Britain) Limited: *See—*
Heritage, Robert, 3,892,960.
Rotolo, Frank J. Golf course playing method. 3,892,413, Cl. 273-176.0AB.

Roubeau, Pierre, to Commissariat a l'Energie Atomique. Method for reducing the consumption of a cryostat and a device for carrying out said method. 3,892,106, Cl. 62-514.000.

Rourke, Christopher P.: *See—*
Baker, Lionel R.; Kirkham, Anthony J.; Martin, Stanley; Lobb, Daniel R.; and Rourke, Christopher P., 3,892,494.

Roussel Uclaf: *See—*
Allais, Andre; Meier, Jean; and Dube, Jacques, 3,892,773.
Nedelec, Lucien; and Frechet, Daniel, 3,892,756.

Rucker Company, The: *See—*
Kilburg, Ronald J., 3,892,299.

Ruegg, Edwin, to Maschinenfabrik und Giesserei Netstal AG. Injection molding machine having separate mold moving and mold closure force applying means which are resettable. 3,892,509, Cl. 425-136.000.

Ruhe, Jochen; and Beck, August, to Balzers Patent-und Beteiligungs Aktiengesellschaft. Sealing member for flanged joints. 3,892,416, Cl. 277-29.000.

Rumyantsev, Vasily Petrovich: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.

Rust Engineering Company: *See—*
Grisell, Charles P., 3,892,546.

Rustenburg Platinum Mines Limited: *See—*
Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, 3,892,790.

Rybchenkov, Alexandr Grigorievich: *See—*
Paton, Vladimir Evgenievich; Smolyarko, Vladimir Borisovich; Belfor, Mikhail Gdal Gershovich; Pichak, Vladimir Grigorievich; Savich, Igor Mavrikievich; Rybchenkov, Alexandr Grigorievich; Pankov, Vasily Ivanovich; and Ignatushenko, Arkady Anatolievich, 3,892,937.

Rydberg, Allan. Multiple hand tool. 3,892,149, Cl. 81-71.000.

Ryder, Anthony David, to Thomas Ryder & Son Limited. Automatic matrix control system. 3,893,082, Cl. 340-166.00R.

S&C Electric Company: *See—*
Harner, Robert H., 3,893,056.

S. E. Hyman Company: *See—*
Dudley, Richard J.; and Dudley, Harold A., 3,892,440.

S.R.C. Laboratories, Inc.: *See—*
Mocarski, Zenon R., 3,892,361.

Saab-Scania Aktiebolag: *See—*
Nilsson, Hans Arne Ingvar, 3,892,474.

Sacomo Sierra Inc.: *See—*
Felt, Maurice D., 3,892,418.

Sagane, Masahiko, to Kansai Paint Co., Ltd.; and New Japan Chemical Co., Ltd. Semi-solid coating composition. 3,892,585, Cl. 106-187.000.

Sahm, Wilfried, to Hoechst Aktiengesellschaft. Aromatic azomethines. 3,892,807, Cl. 260-566.00F.

Sakairi, Hiroshi; Tezuka, Tetuyosi; and Watanabe, Noboru, to Gumze Ltd. Air bag. 3,892,425, Cl. 280-150.0AB.

Sakamoto, Yoichi; and Koyanagi, Yukio, to Matsushita Electric Industrial Co., Ltd. Channel selection device. 3,893,032, Cl. 325-334.000.

Sala, Sergio; and Ambrogio, Cuneo. Self-regenerative carbographic articles comprising a layer interposed between the support and the ink-releasing coating. 3,892,428, Cl. 282-28.00R.

Salemme, Charles T.: *See—*
Carlson, Robert G.; Crawford, Joseph H.; Farmer, Edward R.; Murphy, Guy C.; and Salemme, Charles T., 3,892,612.

Salisbury, Kenneth R.; and Settzo, Robert J., to Corning Glass Works. Method and apparatus for coating a plurality of cylindrical articles. 3,892,651, Cl. 204-192.000.

Sallay, Stephen I., to Purdue Research Foundation. Trialkylmethanobenzazocinols. 3,892,757, Cl. 260-293.540.

Salonen, Albert R. Method and application for applying liquefied adhesive material. 3,892,621, Cl. 156-513.000.

Salvati, John G.; and Ricci, Louis N., to Westinghouse Electric Corp. Solenoid actuated circuit breaker operator. 3,893,050, Cl. 335-1.000.

Sampson, Keith George; Jenkins, Victor Frederick; and Bunker, Anthony John, to Laporte Industries Limited. Hydroxy copolymer reacted with a lactone and polyisocyanate crosslinked. 3,892,714, Cl. 260-77.5CR.

Sanderson, William A.: *See—*
Swidler, Ronald; Sanderson, William A.; and Mueller, William A., 3,892,906.

Sandorf, Robert E.: *See—*
Algeri, Harvey R.; Bruening, Ralph G.; Sandorf, Robert E.; and Stillwell, Fred A., 3,893,006.

Sandoz, Inc.: *See—*
Eberle, Marcel K., 3,892,771.
Houlihan, William J.; and Nadelson, Jeffrey, 3,892,752.
Simpson, William R. J., 3,892,758.

Sandoz Ltd.: *See—*
Ebnother, Anton; Gadient, Fulvio; and Suess, Rudolf, 3,892,774.
Schneider, Rupert, 3,892,554.

Sandoz-Wander, Inc.: *See—*
Hardtmann, Goetz E.; and Kathawala, Faizulla G., 3,892,860.
Linder, Jerome, 3,892,859.

Sanki Engineering Ltd.: *See—*
Nunogaki, Yoshiaki, 3,892,125.

Sankyo Company Limited: *See—*
Tomita, Kazuo; Murakami, Tadashi; Takagi, Hiromu; and Morisawa, Yasuhiro, 3,892,745.

Sano, Shunichi; Kasahara, Koichi; Murphy, Harry C., Jr.; and Stauffer, Harry C., to Tokyo Shibaura Electric Co., Ltd. Colour television receiver. 3,893,174, Cl. 358-65.000.

Sansui Electric Co., Ltd.: *See—*
Takahashi, Susumu; and Ito, Ryosuke, 3,892,918.

Santala, Teuvo J.: *See—*
Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., 3,893,055.

Sapozhnikov, Alexandr Ivanovich: *See—*
Medovar, Boris Izrailevich; Kumysh, Iiya Iosifovich; Boiko, Georgy Alexandrovich; Rabinovich, Volf Iudovich; Sapozhnikov, Alexandr Ivanovich; Marinsky, Georgy Sergeevich; and Kriger, Jury Nikolaevich, 3,892,271.

Sarantakis, Dimitrios: *See—*
McKinley, Wayne A.; and Sarantakis, Dimitrios, 3,892,723.

Sarring, Ernest J., to Rockwell International Corporation. Feed, transport and delivery mechanism for book trimmers and the like. 3,892,319, Cl. 214-8.50F.

Sato, Hitoshi: *See—*
Takayanagi, Shinji; Sato, Hitoshi; and Koshikawa, Koichi, 3,892,914.

Sato, Kazuo: *See—*
Yamanaka, Teruo; and Sato, Kazuo, 3,893,114.

Sato, Nobuaki: *See—*
Omata, Katsuyoshi; and Sato, Nobuaki, 3,893,038.

Satou, Chikara: *See—*
Naitou, Masanori; Nakano, Hiraku; Kashiwai, Shinichi; Satou, Chikara; and Utamura, Motoaki, 3,892,205.

Saucy, Gabriel, to Hoffmann-La Roche Inc. Steroidal intermediates. 3,892,779, Cl. 260-345.200.

Saucy, Gabriel, to Hoffmann-La Roche Inc. Steroidal intermediates. 3,892,812, Cl. 260-594.000.

Saufferer, Helmut, to Daimler-Benz Aktiengesellschaft. Distance warning device for vehicles. 3,892,483, Cl. 356-4.000.

Saunders, Don A., to Mark Products, Inc. Apparatus and method for adjusting the output of a plurality of geophones to eliminate the effect of variations in the near surface character of the earth. 3,893,066, Cl. 340-15.5GC.

Saunders, Peter Reginald: *See—*
Lofquist, Robert Alden; and Saunders, Peter Reginald, 3,892,526.

Savich, Igor Mavrikievich: *See—*
Paton, Vladimir Evgenievich; Smolyarko, Vladimir Borisovich; Belfor, Mikhail Gdal Gershovich; Pichak, Vladimir Grigorievich; Savich, Igor Mavrikievich; Rybchenkov, Alexandr Grigorievich; Pankov, Vasily Ivanovich; and Ignatushenko, Arkady Anatolievich, 3,892,937.

Savin Business Machines Corporation: *See—*
Schaefer, Louis F.; and Gardiner, Kenneth W., 3,892,481.

Sawai, Eisuke: *See—*
Kanai, Kenji; Sawai, Eisuke; and Nouchi, Norimoto, 3,893,187.

Saylor, Jay Harold: *See—*
Benjamin, Lawrence; and Saylor, Jay Harold, 3,892,680.

Schachter, Jacob: *See—*
Kulik, Herbert S.; and Schachter, Jacob, 3,893,022.

Schade, Wolfgang; Krings, Peter; and Batka, Heimold, to Henkel & Cie, GmbH. Washing or dyeing with a non-terminal, vicinal alkanediol adduct of ethylene and propylene oxides. 3,892,522, Cl. 8-93.000.

Schaefer, Louis F.; and Gardiner, Kenneth W., to Savin Business Machines Corporation. Automatic development electrode bias control system. 3,892,481, Cl. 355-10.000.

Scharfe, Gerhard; and Wilhelms, Rolf-Ernst, to Bayer Aktiengesellschaft. Catalytic conversion of hydrocarbon chlorides to hydrogen chloride and hydrocarbons. 3,892,818, Cl. 260-676.00R.

Scharnhorst, Kurt Peter: *See—*
Riedel, Harold R.; Scharnhorst, Kurt Peter; Nudelman, Sol; and Roehrig, Hans, 3,892,966.

Schedler, Walter John. Sound simulator for diesel train engine. 3,893,107, Cl. 340-384.00E.

Scheuerer, Guenter: *See—*
Pommer, Ernst-Heinrich; Scheuerer, Guenter; Bolz, Gerhard; and Mangold, Dietrich, 3,892,861.

Scheuerman, Ronald F.: *See—*
Lybarger, James H.; and Scheuerman, Ronald F., 3,892,275.

Schey, John A. Method of compressing and rolling powder. 3,892,832, Cl. 264-109.000.

Schiavone, Frank A.: *See—*
Chappelow, Ronald E.; Doney, Donald A.; Doulin, Joseph; Lin, Paul T.; and Schiavone, Frank A., 3,892,606.

Schiffarth, Josef: *See—*
Schmidt, Dieter; Lorkin, Clive Graham; and Schiffarth, Josef, 3,892,886.

Schlesch, Ronald D., to Armstrong Machine Works. Inverted bucket steam trap. 3,892,256, Cl. 137-185.000.

Schliebs, Reinhard: *See—*
Eichenhofer, Kurt-Wilhelm; and Schliebs, Reinhard, 3,892,805.

Schlottmann, Roy Otto; and Yadon, Paul Edward. Apparatus for dry packing of surfaces. 3,892,360, Cl. 239-345.000.

Schmerling, Louis, to Universal Oil Products Company. Flame retardant compounds and compositions of matter. 3,892,815, Cl. 260-649.00R.

Schmidt, Dieter; Lorkin, Clive Graham; and Schiffarth, Josef, to Fosceo International Limited. Treatment of electrodes. 3,892,886, Cl. 427-59.000.

Schmidt, Helmut: *See—*
Elser, Wolfgang; and Schmidt, Helmut, 3,892,784.

Schmidt, Josef, to Bell & Howell Company. Information card transport, recording and readout mechanism. 3,893,182, Cl. 360-88.000.

Schneible, Seth R., to Eyelet Specialty Co., Inc. Safety closure for a metal container. 3,892,326, Cl. 215-221.000.

Schneider, Charles, to Charles, Inc. Flexible panel protector for uppermost springs of sofa beds. 3,892,001, Cl. 5-354.00R.

Schneider, Gerhart: *See—*
Kleiner, Hans-Jerg; Schneider, Karl-Heinz; and Schneider, Gerhart, 3,892,524.

Schneider, Karl-Heinz: *See—*
Kleiner, Hans-Jerg; Schneider, Karl-Heinz; and Schneider, Gerhart, 3,892,524.

Schneider, Rupert, to Sandoz Ltd. 2-Amino-4-isopropylamino-6-chloro-pyrimidine in maize, wheat, potatoes, onions and leeks. 3,892,554, Cl. 71-92.000.

Schoene, Kenneth F.: *See—*
Rapisarda, Anthony A.; Schoene, Kenneth F.; and Benken, William B., 3,892,669.

Scholl, Howard O., to American Air Filter Company, Inc. Conveyor having adjustable flights. 3,892,307, Cl. 198-195.000.

Scholz, Hans, to English Electric Valve Company Limited. Vidicon camera tube with internal light source for setting dark current level. 3,892,994, Cl. 313-371.000.

Schoonman, Marten Leonard. Readily separable instant beverage charge. 3,892,867, Cl. 426-93.000.

Schrader, Preston Henry, to Rexnord Inc. Control of reversible vibratory equipment. 3,892,308, Cl. 198-220.0CC.

Schrider, Michael Stanley: *See—*
Brand, William Wayne; and Schrider, Michael Stanley, 3,892,761.

Schroder, Rolf: *See—*
Winkler, Alfred; Engelsmann, Dieter; and Schroder, Rolf, 3,893,139.

Schroeder, Alfred A., to Braley, William V.; and Harman, R. A., Jr. Beverage dispenser. 3,892,335, Cl. 222-129.100.

Schuh, Charles H. Slide rule. 3,892,353, Cl. 235-64.000.

Schulein, Joseph, to Hayward, H. Dutton, trustee; Schulein, Joseph; and Schulein, Margaret A. Electronic pest-control device having plural ultrasonic generators. 3,893,106, Cl. 340-384.00E.

Schulein, Margaret A.: *See—*
Schulein, Joseph, 3,893,106.

Schulte-Elte, Karl-Heinrich, to Firmenich S.A. Process for the preparation of butenoyl 1,3-cyclohexadienes. 3,892,809, Cl. 260-586.00R.

Schultz, Lewis K.: *See—*
Lazzarini, Donald J.; and Schultz, Lewis K., 3,892,646.

Schwake, Jurgen: *See—*
Brandenburg, Klaus; and Schwake, Jurgen, 3,893,030.

Sci-Med, Inc.: *See—*
Freedman, Frank B.; and Ufford, Keith A., 3,892,533.

Sciffer, Jack Pryor, to Australian Wire Industries Proprietary Limited. Wiping hot dipped galvanized wire or strip. 3,892,894, Cl. 427-367.000.

Scionics Corporation, The: *See—*
Farrant, David A.; and Dedona, Francis A., 3,892,511.

Scott, William T.: *See—*
Podesva, Ctirad; Kohan, Geza; and Scott, William T., 3,892,802.

Scovill Manufacturing Company: *See—*
Taylor, Donald O., 3,892,015.

Sebestian, Imrich: *See—*
Halasz, Istvan; Brust, Otto-Ernst; and Sebestian, Imrich, 3,892,678.

Seco Tools AB: *See—*
Riis, Soren, 3,892,550.

Seegall, Manfred I.: *See—*
Compton, William A.; Nachman, Joseph F.; and Seegall, Manfred I., 3,892,836.

Segui, Alain Georges, to Establissement Public dit: Agence Nationale de Valorisation de la Recherche. Transmission system. 3,893,062, Cl. 340-5.00R.

Seidelman, Gerald: *See—*
Gruber, Peregrinus; and Seidelman, Gerald, 3,892,447.

Sellstedt, John H.; and Wolf, Milton, to American Home Products Corporation. Pyrrolo[1,2,3-de]quinoxalin-2(3H)-ones and related compounds. 3,892,746, Cl. 260-247.20A.

Semp, Bernard Albert, to American Cyanamid Company. Sterile rubber glove or catheter package. 3,892,314, Cl. 206-363.000.

Senften, David A., to Hunter Engineering Company. Electronic run-out compensator and method of electronically compensating for wobble run-out in a rotating body. 3,892,042, Cl. 33-301.000.

Senger, John F., to Chevron Research Company. Cold start method and apparatus for carrying out same. 3,892,218, Cl. 123-127.000.

Senjo, Teizo: *See—*
Uchiyama, Hisashi; Meno, Naohiko; Senjo, Teizo; and Kobayashi, Makio, 3,892,837.

Sentourens, Michel Maurice Gerard, to Societe Nationale Industrielle Aerospatiale. Shaping presses. 3,892,116, Cl. 72-305.000.

Seth, Ram Gopal. Method and apparatus for generating high temperature zone using fixed-fluidized bed. 3,892,538, Cl. 23-295.000.

Setterstrom, Carl A., to Cities Service Company. Method of preparing polyethylene foam. 3,892,690, Cl. 260-2.5HA.

Settzo, Robert J.: *See—*
Salisbury, Kenneth R.; and Settzo, Robert J., 3,892,651.

Sfeir, Alberto, to Corporacion de Fomento de la Produccion. Process for the preservation of sea urchin gonads by quick freezing. 3,892,875, Cl. 426-303.000.

Shakib, Iraj D., to International Business Machines Corporation. Single print element print carrier with self-contained selection function. 3,892,304, Cl. 197-18.000.

Shapiro, Leonard: *See—*
Tyson, Ronald S.; and Shapiro, Leonard, 3,892,751.

Sharp Kabushiki Kaisha: *See—*
Takenaka, Takashi, 3,893,177.
Teramura, Satoshi; and Kurata, Kazuyuki, 3,893,083.

Sharpe, Peter S., to Brule' C. E. & E., Inc. Thermal oxidation of wastes and apparatus therefor. 3,892,190, Cl. 110-8.00R.

Shatterproof Glass Corporation: *See—*
McKelvey, Harold E., 3,892,223.
McKelvey, Harold E., 3,892,224.

Shavel, John, Jr.: *See—*
Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,892,739.

Shaw, Bevil J.: *See—*
Phillips, David C.; and Shaw, Bevil J., 3,892,648.
Phillips, David C.; and Shaw, Bevil J., 3,892,649.

Sheehan, John T.: *See—*
Ondetti, Miguel Angel; Pluscec, Josip; and Sheehan, John T., 3,892,726.

Sheffield, David John; Prosser, Paul Edward; and Charman, Bernard William, to Aerpat A.G. Riveting apparatus. 3,892,120, Cl. 72-391.000.

Shell Oil Company: *See—*
Chiu, Ying C., 3,892,668.
Holler, Howard V., 3,892,679.
Kister, Albert T., 3,892,816.
Kollmeyer, Willy D.; and Soloway, Samuel B., 3,892,724.
Lybarger, James H.; and Scheuerman, Ronald F., 3,892,275.
Naber, Jaap E.; and Dautzenberg, Frits M., 3,892,677.

Shen, Tsung-Ying; Jones, Howard; and Mulvey, Dennis M., to Merck & Co., Inc. Acetaminophen esters of aryl salicylic acids. 3,892,769, Cl. 260-326.13R.

Shepard, David H.; and Gushue, Edward J., to Cognitronics Corporation. Character reading apparatus with improved document scanner. 3,893,079, Cl. 340-146.30F.

Sheridan, Arthur L.; and Marbach, Walter V., to Union Carbide Corporation. End plug closures for shirred casing sticks and methods for making them. 3,892,869, Cl. 426-138.000.

Sherman, Benjamin F., Jr. Catoptric system for simultaneous concentration of light, laser, and other type paraxial rays into beams. 3,892,476, Cl. 350-294.000.

Shiba, Keisuke; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Multilayer color photographic material. 3,892,572, Cl. 96-74.000.

Shibata, Akira; and Okamoto, Atutoshi, to Nippondenso Co., Ltd. Digital differentiation circuit. 3,892,952, Cl. 235-151.320.

Shibata, Kazuo; and Matsushita, Takao, to Kanzaki Paper Mfg. Co. Ltd. Process for making an electrostatic recording medium. 3,892,887, Cl. 427-121.000.

Shibaura Engineering Works, Ltd.: *See—*
Yasoshima, Hiroshi, 3,892,146.

Shields, James J.: *See—*
Yannone, Robert A.; and Shields, James J., 3,892,975.

Shiffrin, Barry N.: *See—*
Bossen, Douglas C.; Cordi, Vincent A.; Hsiao, Mu-Yue; Shiffrin, Barry N.; and Glick, Ellis W., 3,893,070.

Shigeto, Suzuki, to Chevron Research Company. Sulfur oxidation of olefins to ketones. 3,892,813, Cl. 260-597.00R.

Shima, Keizo; and Ishihara, Tetsuo, to Daicel Ltd. Masking films. 3,892,900, Cl. 428-40.000.

Shimada, Satoshi, to Sony Corporation. Stereophonic sound reproducing system. 3,892,624, Cl. 179-1.00G.

Shimizu, Kanryo: *See—*
Inaba, Seiuemon; Shimizu, Kanryo; Hashimoto, Yoshihiro; Usami, Hiroshi; and Amemiya, Youichi, 3,893,011.

Shimizu, Toshio: *See—*
Ieki, Mitsuru; Inoue, Kenji; and Shimizu, Toshio, 3,892,593.

Shin, Ihsuk, to Dynasciences Corporation. Inertial stabilization system. 3,892,467, Cl. 350-16.000.

Shinetsu Chemical Company: *See—*
Itoh, Kunio; and Harada, Naohiko, 3,892,707.

Shiraishi, Kunihiko: *See—*
Takeda, Kenzo; Takahashi, Kazuhiko; and Shiraishi, Kunihiko, 3,892,584.

Shlesinger, Bernard Edward, Jr.; and Mariner, Charlie D. Electromagnetic reed switch. 3,893,051, Cl. 335-151.000.

Shoemaker, William M. Multichannel magnetic head unit. 3,893,188, Cl. 360-121.000.

Shope, Steven L.: *See—*
Freeman, John R.; Poukey, James W.; Shope, Steven L.; and Yonas, Gerold, 3,892,970.

Short, George E., to G. D. Searle & Co. Method for fertile breeding control in female bovine. 3,892,855, Cl. 424-238.000.

Shultz, Henry D.: *See—*
Thorson, Albin W.; and Shultz, Henry D., 3,893,094.

Shylo, Paul, to Cook Electric Company. Fault detector and current limiter. 3,892,929, Cl. 179-175.30R.

Sianesi, Enrico, to Recordati SA. Method for preparing aminoalkanol esters of 3-methylflavone-8-carboxylic acid. 3,892,759, Cl. 260-293.580.

Sieffert, William G., to Olinkraft Inc. Shipping container. 3,892,350, Cl. 229-40.000.

Siegal, Burton L.: *See—*
Jaques, Richard E.; and Siegal, Burton L., 3,892,422.

Siemens Aktiengesellschaft: *See—*
Keller, Wolfgang; Kersting, Arno; and Reuschel, Konrad, 3,892,827.
Kellner, Josef; and Kowalczyk, Hans, 3,893,170.
Stein, Karl-Ulrich, 3,892,984.
Weidemann, Erwin, 3,893,162.

Signetics Corporation: *See—*
Silzars, Aris; and Ballonoff, Aaron, 3,893,157.

Silberg, Paul A.: *See—*
Edwards, Robert; and Silberg, Paul A., 3,892,926.

Silzars, Aris; and Ballonoff, Aaron, to Signetics Corporation; and Watkins-Johnson Company. Semiconductor target with integral beam shield. 3,893,157, Cl. 357-69.000.

Simane, Zdenek: *See—*
Dahm, Johann; Borck, Joachim; Nowak, Herbert; Simane, Zdenek; and Kayser, Detlev, 3,892,770.

Simco Company, Inc., The: *See—*
Levy, Warren W., 3,892,614.

Simeonov, Vasil Dragomirov; Mednikarov, Borislav Dimitrov; and Malinowski, Jordan Petrov, to Zlafop Pri Ban of Bulgaria. Photomasks. 3,892,571, Cl. 96-68.000.

Simms, Robert A. Process for changing the tint of a photochromic material and material formed thereby. 3,892,582, Cl. 106-52.000.

Simon, Myron S., to Polaroid Corporation. Naphthol sulfonamidonaphthalides. 3,892,778, Cl. 260-343.20R.

Simons, Robert W.; and Acree, William M., to Rohm and Haas Company. Feline panleukopenia vaccine. 3,892,627, Cl. 195-1.300.

Simpson, William R. J., to Sandoz, Inc. Bis[1-(4-thieno[3,2-c]pyridinyl)-4-piperidyl]alkanes. 3,892,758, Cl. 260-293.570.

Singer Company, The: *See—*
Johnson, Dwight N., 3,892,255.
Prill, Robert S., 3,893,103.

Sira Institute: *See—*
Baker, Lionel R.; Kirkham, Anthony J.; Martin, Stanley; Lobb, Daniel R.; and Rourke, Christopher P., 3,892,494.

Sircar, Jagadish C.; and Zinnes, Harold, to Warner-Lambert Company. Indolosteroids (6,12a-dimethylindeno-(4,5c)-carbazoles) and process therefor. 3,892,767, Cl. 260-315.000.

Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH. Support device for ski safety bindings. 3,892,420, Cl. 280-11.35T.

Siviour, Neil Graham; Pearson, Grant Marshall; and Cullen, Geoffrey Victor, to University of Melbourne. Removal of pollutants from water. 3,892,661, Cl. 210-40.000.

Skaugen, Borgeir, to Beloit Corporation. Inlaying continuous filamentous reinforcement in a nonwoven web. 3,892,622, Cl. 162-108.000.

Slater, Ernest Charles: *See—*
Covarrubias, George Salvador; and Slater, Ernest Charles, 3,892,182.

Slawsky, Zaka I.; and Wilson, Wayne Dee, to United States of America, Navy. Underwater acoustic detection system. 3,893,061, Cl. 340-3.00E.

Sloboda, Mieczyslaw Herman: *See—*
Hatswell, John Sidney; and Sloboda, Mieczyslaw Herman, 3,892,564.

Small, Charles E.; Small, Lawrence E.; Small, Charles R.; and Ellis, Harlan F. Educational game. 3,892,408, Cl. 273-135.0AB.

Small, Charles R.: *See—*
Small, Charles E.; Small, Lawrence E.; Small, Charles R.; and Ellis, Harlan F., 3,892,408.

Small, Lawrence E.: *See—*
Small, Charles E.; Small, Lawrence E.; Small, Charles R.; and Ellis, Harlan F., 3,892,408.

Smedley, William H.: *See—*
Gay, Derek J.; and Smedley, William H., 3,892,086.

Smeets, Gerard Gaston Frans, to Producto Machine Company. Angularly adjustable punch adaptor. 3,892,158, Cl. 83-699.000.

Smeggil, John G.; and Charles, Richard J., to General Electric Company. Air-stable compact of cobalt-rare earth alloy particles and method. 3,892,599, Cl. 148-31.570.

Smeggil, John G.; and Charles, Richard J., to General Electric Company. Annealed coated air-stable cobalt-rare earth alloy particles. 3,892,600, Cl. 148-31.570.

Smeggil, John G.; and Charles, Richard J., to General Electric Company. Coated air-stable cobalt-rare earth alloy particles and method. 3,892,601, Cl. 148-31.570.

Smith, Alexander; and Baggs, Burton D., Jr., to Smitty's Incorporated. Rotary tiller-mulcher. 3,892,278, Cl. 172-70.000.

Smith, Andrew W., Jr., to Westinghouse Electric Corp. Rolling mill gauge control. 3,892,112, Cl. 72-11.000.

Smith, Arnold Ray, to Bell Telephone Laboratories, Incorporated. Flood cover for pedestal closure. 3,892,910, Cl. 174-37.000.

Smith-Berger Manufacturing Corporation: *See—*
Hogan, Elmer R., 3,892,386.

Smith, Geoffrey Allan; and Young, Richard. Fibre treatment. 3,892,893, Cl. 427-352.000.

Smith, Harry Davis, Jr., to Texaco Inc. Methods for thermal well logging. 3,892,128, Cl. 73-154.000.

Smith, John Edward; and Anderson, John Galloway, to Imperial Chemical Industries Limited. Process for growing a fungus. 3,892,629, Cl. 195-36.00R.

Smith, Marjorieann M. Trailer. 3,892,423, Cl. 280-106.00T.

Smith, Russell D.: *See—*
Ebeling, Harold O.; and Smith, Russell D., 3,892,517.

Smith, Thomas M., to Monarch Marking Systems, Inc. Composite label web. 3,892,901, Cl. 428-41.000.

SmithKline Corporation: *See—*
Wdzieczkowski, Francis E., 3,892,489.

Smiths Industries Limited: *See—*
Constable, Geoffrey Ernest Patrick, 3,892,948.

Smitty's Incorporated: *See—*
Smith, Alexander; and Baggs, Burton D., Jr., 3,892,278.

Smolyarko, Vladimir Borisovich: *See—*
Paton, Vladimir Evgenievich; Smolyarko, Vladimir Borisovich; Belfor, Mikhail Gdal Gershovich; Pichak, Vladimir Grigorievich; Savich, Igor Mavrikievich; Rybchenkov, Alexandr Grigorievich; Pankov, Vasily Ivanovich; and Ignatushenko, Arkady Anatolievich, 3,892,937.

Snam Progetti S.p.A.: *See—*
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, 3,892,712.

Sneider, Vincent R. Disposable syringe kit. 3,892,311, Cl. 206-229.000.

Snell, Donald Noel, to Mannesmann-Meer Aktiengesellschaft. Hydraulic presses. 3,892,122, Cl. 72-453.000.

Snelson, Jimmy W.: *See—*
Hudson, Jimmie E.; and Snelson, Jimmy W., 3,892,830.

Snyder, Gary C.: *See—*
Clevenger, James T., Jr.; and Snyder, Gary C., 3,892,286.

Societa Italiana Elettronica S.p.A.: *See—*
Gianni, Bianchini, 3,892,999.

Societe Anonyme Francaise du Ferodo: *See—*
Rist, Michel, 3,892,302.

Societe d'Etudes de Machines Thermiques: *See—*
Kuhn, Karl; and Bouquet, Jean-Claude, 3,892,210.

Societe Europeene de Propulsion: *See—*
Leclercq, Gerard, 3,892,883.

Societe Genevoise d'Instruments de Physique: *See—*
Blattner, Karl; and Picard, Roland, 3,892,965.

Societe Lignes Telegraphiques et Telephoniques: *See—*
Chiron, Bernard; and Fache, Michel, 3,893,109.

Societe Nationale des Poudres et Explosifs: *See—*
Plantif, Bernard E.; and Hiss, Andre H., 3,892,073.

Societe Nationale Industrielle Aerospatiale: *See—*
Sentourens, Michel Maurice Gerard, 3,892,116.

Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
Meylan-Piguet, Marius, 3,892,067.

Sokol, Vincent. Braiding machine wire control. 3,892,161, Cl. 87-29.000.

Solomon, Abby R., to Xerox Corporation. Recorder for monitoring copiers. 3,893,175, Cl. 360-6.000.

Soloway, Samuel B.: *See—*
Kollmeyer, Willy D.; and Soloway, Samuel B., 3,892,724.

Somiya, Seiichi: *See—*
Ueda, Tsuneo; and Somiya, Seiichi, 3,891,999.

Sommer, Walter: *See—*
Kleister, Heinz; and Sommer, Walter, 3,892,143.

Song, Won R.; and Jacobson, Norman, to Exxon Research and Engineering Company. Lubricant containing dispersant-pour depressant polymer. 3,892,671, Cl. 252-51.50A.

Sony Corporation: *See—*
Fukuoka, Toshimi, 3,893,043.
Mogi, Takao; and Okada, Hisao, 3,893,074.
Okada, Takashi; and Nakamura, Isa, 3,892,983.
Omata, Katsuyoshi; and Sato, Nobuaki, 3,893,038.
Shimada, Satoshi, 3,892,624.

Sordello, Frank J., to Information Storage Systems, Inc. Synchronization of multiple disc drives. 3,893,178, Cl. 360-73.000.

Sorenson, Bill W., to AMF Incorporated. Jumping pit. 3,892,401, Cl. 272-59.00R.

Sorokin, Peter P.: *See—*
Hodgson, Rodney T.; Lankard, John R.; Sorokin, Peter P.; and Wynne, James J., 3,892,979.

Sotolongo, Thomas J., to Thomas & Betts Corporation. Ground clamp connector. 3,892,455, Cl. 339-14.00L.

Sotome, Hiromi, to Nippon Gakki Seizo Kabushiki Kaisha. Speaker system for multichannel stereosignal reproduction. 3,892,917, Cl. 179-1.0GQ.

Southco, Inc.: *See—*
Bisbing, Robert H., 3,892,031.

Southern Research Institute: *See—*
Piper, James R.; and Johnston, Thomas P., 3,892,824.

Span-Deck, Inc.: *See—*
McGrew, John P.; Foster, Larry W.; Katzer, John David; and Wilson, Ian S., 3,892,516.

Speers, Daniel E., to General Film Development Corporation. Photosensitive sheets comprising organic dyes and sensitizers. 3,892,569, Cl. 96-67.000.

Spekle, Hendrikus J.: *See—*
Van Assendelft, Leendert; Van Der Kloot, Jacob M.; Van 'T Sant, Antonie; and Spekle, Hendrikus J., 3,892,664.

Spencer, Christopher Buxton: *See—*
Crowther, Alan Lewis; and Spencer, Christopher Buxton, 3,892,780.

Sperry Rand Corporation: *See—*
Clevenger, James T., Jr.; and Snyder, Gary C., 3,892,286.
Getman, Ronald K., 3,892,503.

Lea, John D.; and Rand, George, 3,893,065.
Spin Physics, Inc.: *See—*
Kronn, Willem L., 3,893,189.
Spray, William N. Shelter having a stressed frame with a flexible sheathing thereon. 3,892,094, Cl. 52-63.000.
Spreadall (Proprietary) Limited: *See—*
Van Zyl, Petrus Corneluis, 3,892,024.
Sprinter Pack AB: *See—*
Persson, Karl Rune, 3,892,349.
Staamann, Otto, to Automatic Druckmaschinenfabrik, Firma. Rotary printing machine. 3,892,178, Cl. 101-177.000.
Stahlecker, Fritz; and Stahlecker, Hans. Apparatus for start-spinning on an open-end spinning machine. 3,892,062, Cl. 57-34.00R.
Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, 3,892,062.
Stahler, Alfred F., to Ampex Corporation. Magnetic tape duplicator. 3,893,167, Cl. 360-16.000.
Standard Oil Company: *See—*
Grasselli, Robert K.; Suresh, Dev. D.; and Milberger, Ernest C., 3,892,794.
Steigelmann, Edward F.; Ries, Herman E., Jr.; and Hughes, Robert D., 3,892,665.
Stankus, Robert W., to Letot, Incorporated. Telephone control system. 3,892,922, Cl. 179-2.00A.
Stanley, Joseph, Jr., to Kay Laboratories, Inc. Hot or cold pack and apparatus for and method of making same. 3,892,060, Cl. 53-127.000.
Statham, Charles D.: *See—*
Foerster, George S.; and Statham, Charles D., 3,892,565.
Stauffer Chemical Company: *See—*
Baker, Don R.; and Teach, Eugene G., 3,892,786.
Kezerian, Charles, 3,892,694.
Stauffer, Harry C.: *See—*
Sano, Shunichi; Kasahara, Koichi; Murphy, Harry C., Jr.; and Stauffer, Harry C., 3,893,174.
Steag AG: *See—*
Zimmerman, Fritz; and Pogrzeba, Hans-Joachim, 3,892,542.
Steelcase Inc.: *See—*
Bruins, Roger C., 3,892,451.
Vankuik, Dirk J.; and Wilcox, Glae F., 3,892,095.
Steele, Howard R.: *See—*
Hajek, James D.; and Steele, Howard R., 3,892,634.
Steenbergen, Zwier. Plastics made crate for bottles. 3,892,328, Cl. 220-21.000.
Steigelmann, Edward F.; Ries, Herman E., Jr.; and Hughes, Robert D., to Standard Oil Company. Membrane method and product. 3,892,665, Cl. 210-490.000.
Stein, Charles W., to Data Royal, Incorporated. Variable size character generator with constant display density method. 3,893,100, Cl. 340-336.000.
Stein, Karl-Ulrich, to Siemens Aktiengesellschaft. Regenerating circuit in the form of a keyed flip-flop. 3,892,984, Cl. 307-279.000.
Steiner, Maurice. Self-injecting syringe. 3,892,237, Cl. 128-216.000.
Sterling Drug Inc.: *See—*
Hinkel, Emil T., Jr., 3,892,851.
Nickel, Ardie R.; Rosenberg, Franklin J.; and Ackerman, James H., 3,892,800.
Stevens, Peter; and Deuber, John M., to Oxy Metal Industries Corporation. Electrolyte and method for electrodepositing rhodium-ruthenium alloys. 3,892,638, Cl. 204-43.00N.
Stillwell, Fred A.: *See—*
Algeri, Harvey R.; Bruening, Ralph G.; Sandorf, Robert E.; and Stillwell, Fred A., 3,893,006.
Stiot, Jean-Pierre Henri; and Brouard, Claude Marie Henri Emile, to Produits Chimiques Ugine Kuhlmann. Unsaturate containing azo indazolium dyestuffs. 3,892,725, Cl. 260-157.000.
Stobbe, Elmer H. Composition and method for controlling wild oats. 3,892,556, Cl. 71-111.000.
Stout, Daniel W., to Daniels, Gerald C., a part interest. Closed recycling system for water purification and waste reduction. 3,892,662, Cl. 210-66.000.
Strengholt, Roy D., to Donnelly Mirrors, Inc. Electrically heated panel with anti-shock conductive strips. 3,892,947, Cl. 219-522.000.
Strickland, William A., Jr.; and Hinman, Walter L., Jr., to Westinghouse Electric Corporation. Segregated phase comparison relaying apparatus. 3,893,008, Cl. 317-27.00R.
Striebich, Alfred: *See—*
Heeg, Rudolf; and Striebich, Alfred, 3,892,798.
Strub, Rene, to Sulzer Brothers Ltd. Multistage turbocompressor having an intermediate cooler. 3,892,499, Cl. 415-179.000.
Struyk, Adrianus Petrus; and Waisvisz, Jacques Maurits, to Gist-Brocades N.V. Pimaricin and process of producing same. 3,892,850, Cl. 424-119.000.
Strycker, Wallace Glenn: *See—*
Hayao, Shin; Havera, Herbert John; and Strycker, Wallace Glenn, 3,892,748.
Stuard, Charles Donald: *See—*
Johnson, Charles Louis; and Stuard, Charles Donald, 3,892,351.
Stutz, Hansruedi, to Aktiengesellschaft Gebruder Loepfe. Method and apparatus for adjusting an electronic yarn cleaner. 3,892,951, Cl. 235-151.300.
Suess, Rudolf: *See—*
Ebnother, Anton; Gadient, Fulvio; and Suess, Rudolf, 3,892,774.
Sugahara, Yujiro; Noshi, Yoshibumi; and Naito, Hiroyuki, to Mizusawa Kagaku Kogyo Kabushiki Kaishi. White pigment excelling in resistance to flame and corrosion. 3,892,577, Cl. 106-14.000.
Sugano, Manabu: *See—*
Nagao, Takumi; and Sugano, Manabu, 3,892,354.
Sugihara, Syoetsu: *See—*
Uetani, Yoshio; Ikebata, Rokurou; Kashiwaya, Kentaro; Sugihara, Syoetsu; and Hisatomi, Kaoru, 3,892,591.
Sugiyama, Shunichi: *See—*
Yamada, Takeo; Kunioka, Kazuo; Sugiyama, Shunichi; and Teramoto, Toyokazu, 3,892,392.
Sulzer Brothers Ltd.: *See—*
Strub, Rene, 3,892,499.
Sumitomo Metal Industries, Ltd.: *See—*
Uchiyama, Hisashi; Meno, Naohiko; Senjo, Teizo; and Kobayashi, Makio, 3,892,837.
Summa Corporation: *See—*
Goldin, Morris, 3,892,181.
Summit Metal Fabricating, Inc.: *See—*
Gerlach, Hans W., 3,892,155.
Sun Chemical Corporation: *See—*
Horwitt, Laurence G.; and Mattis, Donald J., 3,892,944.
Tyson, Ronald S.; and Shapiro, Leonard, 3,892,751.
Sun Oil Company: *See—*
Bennett, John, 3,892,287.
Sunahara, Kazuo: *See—*
Watanabe, Kiyoshi; Misumi, Akira; Onodera, Takayoshi; and Sunahara, Kazuo, 3,892,890.
Sunstein, David E. Electrically-controlled image-display system and method, and apparatus suitable for use therein. 3,893,165, Cl. 358-67.000.
Superior Oil Company, The: *See—*
Burnham, John S., 3,892,551.
Suresh, Dev. D.: *See—*
Grasselli, Robert K.; Suresh, Dev. D.; and Milberger, Ernest C., 3,892,794.
Suzuki, Yasushi: *See—*
Kaneda, Kazuyoshi; Suzuki, Yasushi; and Wada, Kenji, 3,892,636.
Svenska Dataregister AB: *See—*
Myren, Rune L., 3,893,077.
Swanson, Elmer G.: *See—*
Hughes, Walter R.; Vear, John P.; and Swanson, Elmer G., 3,892,346.
SWF Spezialfabrik fur Autozubehor: *See—*
Erdelitsch, Herbert; and Hecht, Walter, 3,892,932.
Swidler, Ronald; Sanderson, William A.; and Mueller, William A., to Cotton, Incorporated. Flame retardant fibrous material having improved dimensional stability. 3,892,906, Cl. 428-289.000.
Swoboda, John J., Jr.; and Boatman, Lawrence T., to Victoria Machine Works. Tugboat-barge connection system. 3,892,196, Cl. 114-235.00A.
Szabo, Marton J., to P.H.C. Industries, Inc. Method of making a sheathed soft-feel handle. 3,892,615, Cl. 156-273.000.
Szatala, Odon: *See—*
Matolcsy, Gyorgy; Bordas, Barna; Szatala, Odon; Andriska, Viktor; Grega, Erzsebet, nee Toth; Pinter, Zoltan; and Nagy, Sandor, 3,892,747.
Tabata, Yoneho; Ukihashi, Hiroshi; and Yamabe, Masaaki, to Japan Atomic Energy Research Institute; and Asahi Glass Company. Process for producing a copolymer of tetrafluoroethylene and propylene. 3,892,641, Cl. 204-159.220.
Taggart, Robert B.; Barth, Richard H.; and Bailey, John S., to Hewlett-Packard Company. Miniaturized magnetic card reader/recorder for use in hand-held calculator. 3,893,173, Cl. 360-60.000.
Taguchi, Tatsuya; and Iura, Yukio, to Canon Kabushiki Kaisha. Device for adjusting a shutter exposure time for a camera. 3,893,143, Cl. 354-258.000.
Taiyo Fishery Co., Ltd.: *See—*
Kanemitsu, Tsunetoshi, 3,892,866.
Takagi, Hiromu: *See—*
Tomita, Kazuo; Murakami, Tadashi; Takagi, Hiromu; and Morisawa, Yasuhiro, 3,892,745.
Takahashi, Ichiro: *See—*
Ugajin, Mitsuhiro; and Takahashi, Ichiro, 3,892,838.
Takahashi, Kazuhiko: *See—*
Takeda, Kenzo; Takahashi, Kazuhiko; and Shiraishi, Kunihiko, 3,892,584.
Takahashi, Noriyuki; Miyahara, Hiromitsu; and Inoue, Hidehiko, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle-height control device. 3,892,424, Cl. 280-124.00F.
Takahashi, Susumu; and Ito, Ryosuke, to Sansui Electric Co., Ltd. Sound signal converting apparatus for use in a four channel stereophonic reproduction system. 3,892,918, Cl. 179-1.0GQ.
Takahashi, Yoshio; Abe, Kunio; and Tanaka, Haruhiko, to Pioneer Electronic Corporation. Record changer. 3,892,415, Cl. 274-10.00S.
Takasago Perfumery Co., Ltd.: *See—*
Akutagawa, Susumo; Kumobayashi, Hidenori; and Komatsu, Akira, 3,892,817.
Takasaka, Naomichi: *See—*
Oda, Nakaaki; Iwasa, Shozo; Idohara, Mitsuru; Horie, Yoshio; Fukui, Takeo; and Takasaka, Naomichi, 3,892,709.
Takashima, Masaru, to Aikoh Company, Ltd. Composition for treating steels. 3,892,561, Cl. 75-58.000.
Takayanagi, Shinji; Sato, Hitoshi; and Koshikawa, Koichi, to Nihon Denshi Kabushiki Kaisha. System for recording and reproducing picture signals with amplitude reference signals. 3,892,914, Cl. 178-6.70A.

Take, Teruo: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Nagata, Akiho; Ando, Takuji; Take, Teruo; Izumi, Rokuro; Noda, Toshiharu; and Matsuura, Kazuo, 3,892,732.

Takeda Chemical Industries, Ltd.: *See—*
Ochiai, Michihiko; Aki, Osami; Morimoto, Akira; and Okada, Taiiti, 3,892,737.

Takeda, Kenzo; Takahashi, Kazuhiko; and Shiraishi, Kunihiko, to Nippon Crucible Co., Ltd. Monolithic refractory materials. 3,892,584, Cl. 106-56.000.

Takeda Riken Industry Company Limited: *See—*
Furukawa, Hikaru; Kumazawa, Shozo; and Wakayama, Noriyuki, 3,893,104.

Takeda Riken Kogyo Kabushiki Kaisha: *See—*
Maejima, Tsugie, 3,892,955.

Takenaka, Takashi, to Sharp Kabushiki Kaisha. Automatic program finder system for tape decks. 3,893,177, Cl. 360-72.000.

Takenoshita, Mitsuaki; Fujisawa, Fumio; and Nakamura, Ichiro, to Hitachi, Ltd. Hydraulic elevators. 3,892,292, Cl. 187-17.000.

Talonen, Timo Tapani: *See—*
Nermes, Esko Olavi; Talonen, Timo Tapani; and Aaltonen, Olavi August, 3,892,560.

Tamai, Hisashi; and Iizuka, Yoshitoku, to Honda Giken Kogyo Kabushiki Kaisha. Integral intake and exhaust conduit for internal combustion engine. 3,892,212, Cl. 123-122.0AB.

Tamer, Ergun; Hendricks, Udo; and Quaedvlieg, Mathieu, to Bayer Aktiengesellschaft. Process for lowering the dyestuff affinity of fibre materials made of polyacrylonitrile. 3,892,527, Cl. 8-172.000.

Tamny, Simon Z., to Nordson Corporation. Electrostatic spray apparatus and method. 3,892,357, Cl. 239-15.000.

Tanaka, Atsushi: *See—*
Goto, Hachiro; Tanaka, Atsushi; Iizuka, Shiho; and Kitamura, Takahiko, 3,892,820.

Tanaka, Goro; and Narahara, Toshikazu, to Hitachi, Ltd. Thermally curable compositions and process for curing said compositions. 3,892,643, Cl. 204-159.130.

Tanaka, Haruhiko: *See—*
Takahashi, Yoshio; Abe, Kunio; and Tanaka, Haruhiko, 3,892,415.

Tanaka, Takeshi, to Ishizuka Garasu Kabushiki Kaisha. Glass ceramic article having a metallic coating layer in a localized area or its surface and method of making the same. 3,892,904, Cl. 428-209.000.

Taniguchi, Hiroyoshi; Wakabayashi, Toshio; Maeda, Takuma; and Ishimoto, Kenzi, to Ube Industries, Ltd. Containers for use in extrusion press and method of manufacturing the same. 3,892,114, Cl. 72-272.000.

Tarman, Paul B.: *See—*
Punwani, Dharamvir; Massey, Lester G.; and Tarman, Paul B., 3,892,682.

Tate, David Arthur: *See—*
Kenn, Robert Charles; and Tate, David Arthur, 3,892,184.

Tatsuta, Sumitaka; and Ueno, Wataru, to Fuji Photo Film Co., Ltd. Method of improving the surface of a high molecular weight support. 3,892,573, Cl. 96-67.000.

Taubman, Harro J.: *See—*
Bauer, Heinrich; Dorner, Karl-Heinz; Eberlin, Helmut; Kaulen, Hans; Pazurek, Werner; Richarz, Heinz; Taubman, Harro J.; and Wolf, Gerhard, 3,892,113.

Taylor, Donald O., to Scovill Manufacturing Company. Waistband fastener. 3,892,015, Cl. 24-201.0HH.

Taylor, Duane F.; Everett, Richard C.; Everett, Harry F.; and Williams, Norman C. Apparatus for augmenting venous blood flow. 3,892,229, Cl. 128-24.00R.

Taylor, Ray D., to B.F. Goodrich Company, The. Preparation of thiocarbamylsulfenamides. 3,892,741, Cl. 260-246.00B.

Teach, Eugene G.: *See—*
Baker, Don R.; and Teach, Eugene G., 3,892,786.

Tedeschi, David Henry: *See—*
Hofmann, Corris Mabelle; Osterberg, Arnold Curtis; Greenblatt, Eugene Newton; and Tedeschi, David Henry, 3,892,772.

Teijin Ltd.: *See—*
Goto, Hachiro; Tanaka, Atsushi; Iizuka, Shiho; and Kitamura, Takahiko, 3,892,820.
Izawa, Nobuharu; Katsu, Mutsuo; Murase, Yasuhiro; and Kondo, Takamitsu, 3,892,021.
Kurozumi, Seizi; Toru, Takashi; and Ishimoto, Sachio, 3,892,630.
Ogawa, Kiyoshi; Koyama, Seiji; and Michihara, Takehiko, 3,892,342.

Tekelec, Inc.: *See—*
Wasserman, Philip D., 3,893,105.

Tektronix, Inc.: *See—*
Cavoretto, James Louis; Allworth, Alfred Alden; and Infante, Carlo, 3,893,036.
Veenendaal, Cornelis Teunis, 3,893,027.

Teledyne, Inc.: *See—*
Adair, William A.; and Pollowy, Richard F., 3,892,041.

Telefonaktiebolaget L M Ericsson: *See—*
Bjorklund, Fritz Lars Gunnar; and Matzner, Eva, 3,892,596.

Teletype Corporation: *See—*
Heeren, Richard H., 3,893,146.

Telex Communications, Inc.: *See—*
Pietenpol, Kermit W., 3,892,345.

Telex Computer Products, Inc.: *See—*
Pembroke, Richard W., 3,892,007.

Tems, Adam, to Milross Controls, Inc. Integrated circuit carrier. 3,892,312, Cl. 206-328.000.

Tenenbaum, Milton D.: *See—*
Tsevdos, Theodore L.; Tsevdos, Nicholas L.; and Tenenbaum, Milton D., 3,892,976.

Tennant Company: *See—*
Christensen, Bryan L.; and Berg, David W., 3,892,008.
Peabody, Ralph C., 3,892,003.

Teramoto, Toyokazu: *See—*
Yamada, Takeo; Kunioka, Kazuo; Sugiyama, Shunichi; and Teramoto, Toyokazu, 3,892,392.

Teramura, Satoshi; and Kurata, Kazuyuki, to Sharp Kabushiki Kaisha. Key input indicating system. 3,893,083, Cl. 340-172.500.

Terry, Stephen C.: *See—*
Orban, Richard; Terry, Stephen C.; and Enea, Horace J., 3,893,075.

Texaco Inc.: *See—*
Dancy, Julian H., 3,893,003.
Dancy, Julian H., 3,893,004.
Kablaoui, Mahmoud S.; and Lachowicz, Donald R., 3,892,810.
Knifton, John F., 3,892,788.
Meador, Richard A.; and Thompson, Larry W., 3,893,020.
Meador, Richard A.; and Arnold, Richard H., 3,893,021.
Smith, Harry Davis, Jr., 3,892,128.
White, James A.; Chesluk, Ralph P.; and Platte, Howard J., 3,892,670.

Texas Instruments Incorporated: *See—*
Bell, Antony G., 3,893,088.
Beunk, Gerrit J.; and van der Ploeg, Arie, 3,893,057.
Bryant, John D., 3,892,957.
Jost, Ernest M.; McBride, Lyle E., Jr.; and Santala, Teuvo J., 3,893,055.
King, John A.; and Brown, Donald L., 3,893,019.
Marcoux, Leo; Flanagan, Charles D.; and Evans, Thomas E., 3,893,054.
McBride, Lyle E., Jr.; and Bowman, William W., 3,893,108.
Williams, Clark R., 3,893,017.

Textron Inc.: *See—*
Watson, David G., 3,892,017.

Tezuka, Tetuyosi: *See—*
Sakairi, Hiroshi; Tezuka, Tetuyosi; and Watanabe, Noboru, 3,892,425.

Thacker, Charles P.: *See—*
Hawley, Jack S.; Bates, Roger D.; and Thacker, Charles P., 3,892,963.

Thiessen, Klaus: *See—*
Biermann, Manfred; Brauer, Bernd; Heidborn, Wolfgang; Monno, Bernd; and Thiessen, Klaus, 3,892,471.

Thomas & Betts Corporation: *See—*
Izraeli, Hyman, 3,892,460.
Kohke, Stephen J., 3,892,011.
Sotolongo, Thomas J., 3,892,455.

Thomas Ryder & Son Limited: *See—*
Ryder, Anthony David, 3,893,082.

Thompson-Brandt: *See—*
Lainez, Lucien; Duiker, Fokke; Bayard, Joel; and Di Campli, Dominique, 3,892,025.

Thompson, Larry W.: *See—*
Meador, Richard A.; and Thompson, Larry W., 3,893,020.

Thomson-CSF: *See—*
Lardat, Claude, 3,893,047.

Thomson-CSF S.C.P.I.: *See—*
Micheron, Francois; and Bismuth, Guy, 3,892,465.

Thorington, Luke; and Parascandola, Louis J., to Duro-Test Corporation. Arc discharge lamp for producing controlled energy spectrum. 3,892,997, Cl. 313-487.000.

Thornburg, Donald R.; and Foster, Karl, to Westinghouse Electric Corp. Method of producing normal grain growth (110) [001] textured iron-cobalt alloys. 3,892,604, Cl. 148-120.000.

Thornburg, Donald R., to Westinghouse Electric Corp. Method of producing primary recrystallized textured iron alloy member having an open gamma loop. 3,892,605, Cl. 148-120.000.

Thornburgh, William F., to General Motors Corporation. Method of manufacturing an intake manifold for exhaust gas recirculation. 3,892,026, Cl. 29-156.40R.

Thorne, Gale H.; Wood, Orin Lew; and Knudson, Kay L., to Baxter Laboratories, Inc. Preservation of organs. 3,892,628, Cl. 195-1.700.

Thorson, Albin W.; and Shultz, Henry D., to Bank Of America National Trust & Savings Association. Customer directing system. 3,893,094, Cl. 340-258.00B.

Tibbett, Michael Edward. Apparatus for vortex generation to precipitate suspended particles in fluid bodies. 3,892,075, Cl. 61-4.000.

Tieben, James B. Headgate. 3,892,203, Cl. 119-99.000.

Time Computer, Inc.: *See—*
Reese, Robert O., 3,892,124.

Timmermans, Abraham, to U.S. Philips Corporation. High pressure discharge lamp. 3,892,993, Cl. 313-318.000.

Tobe, Martin Leslie; Khokhar, Abdul Rauf; and Braddock, Peter David Michael, to Rustenburg Platinum Mines Limited. Compositions containing platinum. 3,892,790, Cl. 260-429.00R.

Tokumitsu, Iwao: *See—*
Yamamoto, Hiroshi; Kato, Shoichi; Ohgushi, Koji; and Tokumitsu, Iwao, 3,892,864.

Tokuyama Soda Kabushiki Kaisha: *See—*
Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, 3,892,688.
Motani, Kensuke; Nakahara, Akihiko; and Kuramoto, Nobuyuki, 3,892,689.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Sano, Shunichi; Kasahara, Koichi; Murphy, Harry C., Jr.; and Stauffer, Harry C., 3,893,174.
Tomishima, Kazunaru: *See—*
Ando, Shigeru; Tomishima, Kazunaru; and Nishikawa, Akira, 3,892,473.
Tomita, Kazuo; Murakami, Tadashi; Takagi, Hiromu; and Morisawa, Yasuhiro, to Sankyo Company Limited. Isoxazolone derivatives and process for preparing the same. 3,892,745, Cl. 260-247.20A.
Tomoshige, Toru: *See—*
Mori, Akikazu; Nara, Hideo; Kataoka, Toshiki; Kato, Teiji; Tomoshige, Toru; Funakoshi, Katsumi; and Kobayashi, Toshio, 3,892,717.
Toogoo, Kazushi; Yamagata, Mineo; and Akamatsu, Akira, to Ajinomoto Co., Inc. Method for adhering polyamino acid coating to plasticized polyvinyl chloride. 3,892,895, Cl. 427-385.000.
Toome, Voldemar: *See—*
Felix, Arthur Martin; Toome, Voldemar; and Weigele, Manfred, 3,892,530.
Torres, Anibal: *See—*
Hetzel, Donald S.; and Torres, Anibal, 3,892,879.
Toru, Takashi: *See—*
Kurozumi, Seizi; Toru, Takashi; and Ishimoto, Sachio, 3,892,630.
Total Enterprises, Inc.: *See—*
Wulc, Stanley S., 3,892,282.
Touval, Irving, to M & T Chemicals Inc. Novel flame retardant compositions. 3,892,667, Cl. 252-8.100.
Townsend Engineering Company: *See—*
Townsend, Ray T., 3,892,009.
Townsend, Ray T., to Townsend Engineering Company. Means of conveying plastic material through a conduit. 3,892,009, Cl. 17-35.000.
Toyo Jozo Kabushiki Kaisha: *See—*
Abe, Jinnosuke; Watanabe, Tetsuo; Nagata, Akiho; Ando, Takuji; Take, Teruo; Izumi, Rokuro; Noda, Toshiharu; and Matsuura, Kazuo, 3,892,732.
Toyo Seikan Kaisha Limited: *See—*
Komatsu, Yoshihiro; and Yamaguchi, Kanemichi, 3,892,058.
Toyoda, Moriaki, to Denki Onkyo Company, Ltd. Tape feed control apparatus. 3,893,179, Cl. 360-74.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Niimi, Itaru; Kaneko, Yasuhisa; and Noda, Fumiyoshi, 3,892,907.
Yamanaka, Teruo; and Sato, Kazuo, 3,893,114.
Transcripts, Inc.: *See—*
Budworth, Ronald L.; and Van Leer, Richard A., 3,892,915.
Trenam, Richard S., to United States of America, Navy. Omnidirectional ring antenna for EW amplitude comparison direction finding. 3,893,120, Cl. 343-119.000.
Trent, Lynn E.: *See—*
Martin, Lewis P.; and Trent, Lynn E., 3,892,263.
Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. Cyanodithiocarbamic acid derivatives of cephalosporins. 3,892,735, Cl. 260-243.00C.
Trevino, Manuel C. Golf game. 3,892,405, Cl. 273-87.200.
Triangle Engineering, Inc.: *See—*
Coulstring, Robert N., 3,892,089.
Troy, Walter C.; Novak, James J.; Costello, Richard C.; and Dearth, Raymond J., to Amsted Industries Incorporated. Apparatus for the removal of non-metallic impurities from molten metal. 3,892,272, Cl. 164-306.000.
Trueman, Frederick Ranson; Couzens, Roy George Swain; and Islip, Brian Henry. Means for dispensing metered quantities of food products from a reservoir to a receptacle. 3,892,338, Cl. 222-254.000.
TRW Inc.: *See—*
Hayden, Rodney; and Davidson, Gordon M., 3,893,194.
Wuerker, Ralph F.; and Heflinger, Lee O., 3,892,487.
Tsevdos, Nicholas L.: *See—*
Tsevdos, Theodore L.; Tsevdos, Nicholas L.; and Tenenbaum, Milton D., 3,892,976.
Tsevdos, Theodore L.; Tsevdos, Nicholas L.; and Tenenbaum, Milton D. Auto theft prevention device. 3,892,976, Cl. 307-10.0AT.
Tsuboshima, Kosaku; and Orimo, Ryoichi, to Olympus Optical Co., Ltd. Automatic driving and control circuit for a microscope stage of a microphotometric apparatus. 3,892,484, Cl. 356-96.000.
Tsuei, Ching Tan: *See—*
Diamond, Julius; and Tsuei, Ching Tan, 3,892,803.
Tsui, Frank; and Tsui, Katherine, to International Business Machines Corporation. Gas discharge device for multicolor information display. 3,892,998, Cl. 313-487.000.
Tsui, Katherine: *See—*
Tsui, Frank; and Tsui, Katherine, 3,892,998.
Tsujimoto, Kayoshi; and Matsui, Toru, to Minolta Camera Kabushiki Kaisha. Electrically controlled shutter for use in photographic cameras. 3,893,133, Cl. 354-24.000.
Tsujimoto, Michihiro: *See—*
Okubo, Ichiro; and Tsujimoto, Michihiro, 3,892,734.
Tucci, Domenick; and Cantalupi, Lewis. Handbag alarm system. 3,893,096, Cl. 340-283.000.
Tucker, Oliver M. Vaporizing carburetor. 3,892,547, Cl. 55-178.000.
Tucker, Raymond A., Jr. Trailer back-up-right device. 3,893,068, Cl. 340-51.000.
Tuffile, Fred M.: *See—*
Cunningham, Andrew J.; and Tuffile, Fred M., 3,892,845.
Tull, Roger J.: *See—*
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., 3,892,744.
Tummillo, Dominick. Foot and leg correctional device particularly for infants. 3,892,231, Cl. 128-80.00A.
Tung, Chung C., to Hewlett-Packard Company. Inverse/complementary function prefix key. 3,892,958, Cl. 235-156.000.
Twose, Mike. Cold weather clothing suit. 3,892,225, Cl. 126-204.000.
Tyson, Ronald S.; and Shapiro, Leonard, to Sun Chemical Corporation. Zeta form of quinacridone. 3,892,751, Cl. 260-279.00R.
Ube Industries, Ltd.: *See—*
Taniguchi, Hiroyoshi; Wakabayashi, Toshio; Maeda, Takuma; and Ishimoto, Kenzi, 3,892,114.
Uchiyama, Hisashi; Meno, Naohiko; Senjo, Teizo; and Kobayashi, Makio, to Fuji Kasui Engineering Co., Ltd.; and Sumitomo Metal Industries, Ltd. Process for removing sulfur oxides from gases. 3,892,837, Cl. 423-242.000.
Ueda, Tsuneo; and Somiya, Seiichi, to Fuji Electric Co., Ltd. Apparatus and method for controlling water wheel. 3,891,999, Cl. 415-1.000.
Ueno, Seiichi: *See—*
Anazawa, Shinzo; Ueno, Seiichi; and Nagasako, Isamu, 3,893,193.
Ueno, Wataru: *See—*
Tatsuta, Sumitaka; and Ueno, Wataru, 3,892,573.
Uetani, Yoshio; Ikebata, Rokurou; Kashiwaya, Kentaro; Sugihara, Syoetsu; and Hisatomi, Kaoru, to Hitachi Maxell, Ltd. Dry cell and manufacture of the same. 3,892,591, Cl. 136-102.000.
Uetsuki, Toshio; Okajima, Mitsuo; and Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. Monitoring system for coating a substrate. 3,892,490, Cl. 356-161.000.
Ufford, Keith A.: *See—*
Freedman, Frank B.; and Ufford, Keith A., 3,892,533.
Ugajin, Mitsuhiro; and Takahashi, Ichiro, to Japan Atomic Energy Research Institute. Method of producing thermally stable uranium carbonitrides. 3,892,838, Cl. 423-253.000.
Uhlig, Albert R., to Owens-Illinois, Inc. Method of making blown plastic articles. 3,892,829, Cl. 264-89.000.
Ukihashi, Hiroshi: *See—*
Tabata, Yoneho; Ukihashi, Hiroshi; and Yamabe, Masaaki, 3,892,641.
Under Sea Industries, Inc.: *See—*
Alinari, Carlo, 3,892,131.
Ungnadner, Peter: *See—*
Winkler, Alfred; Geisslinger, Wolfgang; and Ungnadner, Peter, 3,892,479.
Union Brass & Metal Manufacturing Co.: *See—*
Hesse, Paul R., 3,892,383.
Union Carbide Corporation: *See—*
Frechtling, Arthur C., 3,892,822.
Guest, Christopher John Scott; and Ford, Keith Graham, 3,892,882.
Hofer, Peter H., 3,892,892.
Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Lundberg, Robert Dean, 3,892,821.
Sheridan, Arthur L.; and Marbach, Walter V., 3,892,869.
Uniroyal, Inc.: *See—*
Burkus, John; Leclerc, Robert G.; and Esposito, Louis V., 3,892,713.
United Aircraft Corporation: *See—*
Ferrar, Carl M., 3,892,486.
United States of America
Agriculture: *See—*
Wagner, Joseph R.; Miers, Jackson C.; and Becker, Robert, 3,892,877.
Air Force: *See—*
De Pierre, Vincent; and Gurney, Ferdinand J., 3,892,030.
Edmonds, Walter R., 3,892,488.
Army: *See—*
Arthur, William E.; Carrell, Terry E.; and Crego, Willard, 3,892,971.
Kanode, Albert E., 3,892,491.
Lieberman, Stuart I., 3,893,048.
Wolfgram, Franklin C., 3,892,052.
Energy Research and Development Administration: *See—*
Freeman, John R.; Poukey, James W.; Shope, Steven L.; and Yonas, Gerold, 3,892,970.
Giles, Paul M., 3,892,529.
Patterson, John F., 3,892,625.
Health, Education and Welfare: *See—*
Campbell, Jeptha E.; and Gilchrist, James E., 3,892,632.
Interior: *See—*
Leavenworth, Howard W., Jr.; Amey, Earle B.; Dunning, Beverly W., Jr.; Gabler, Robert C., Jr.; and Goldsmith, Carl E., 3,892,639.
Oudenhoven, Martin S., 3,892,076.
Wright, Charles H.; and Pastor, Gerald R., 3,892,654.
Navy: *See—*
Booher, Harold R., 3,892,053.
Brown, Neil L., 3,892,281.
Drake, David L., 3,893,110.
Linder, John L., 3,893,115.
Madjid, A. Hamid, 3,893,148.
Park, Robert H.; Klas, Harold W.; and Estes, Nelson N., 3,893,063.
Phillips, Carroll D., 3,892,162.
Phillips, David C.; and Shaw, Bevil J., 3,892,648.
Phillips, David C.; and Shaw, Bevil J., 3,892,649.
Riedel, Harold R.; Scharnhorst, Kurt Peter; Nudelman, Sol; and Roehrig, Hans, 3,892,966.

Slawsky, Zaka I.; and Wilson, Wayne Dee, 3,893,061.
Trenam, Richard S., 3,893,120.
Whitman, Edward C.; and Blake, George B., 3,893,042.
Winget, Clifford L.; Doherty, Kenneth W.; and Wirsen, Carl O., 3,892,130.
Yang, Joseph H.; and Wolff, Stephen S., 3,893,039.
Transportation: *See—*
Quinn, Robert W., 3,892,133.
U.S. Philips Corporation: *See—*
Bloem, Jan; and Goemans, Antonius Hermanus, 3,892,940.
Bosselaar, Cornelis Albertus; Klaver, Olof Erik Hans; Verwey, Jan Florus; and Van Santen, Johannes Gerrit, 3,893,151.
Brandenburg, Klaus; and Schwake, Jurgen, 3,893,030.
Dubois, Jean-Claude, 3,893,150.
Eversteijn, Franciscus Cornelis; and Peek, Hermanus Leonardus, 3,892,607.
Kooi, Else, 3,892,033.
Otala, Matti Niilo Tapani, 3,893,023.
Ranner, Georg, 3,892,923.
Timmermans, Abraham, 3,892,993.
Wessels, Johannes Hendrik; and van den Bussche, Willem, 3,893,163.
Universal Oil Products Company: *See—*
Germanas, Dalia; and Pollitzer, Ernest L., 3,892,683.
Hayes, John C., 3,892,656.
Schmerling, Louis, 3,892,815.
Wilhelm, Frederick C., 3,892,657.
University of Delaware: *See—*
Austin, Paul Rolland, 3,892,731.
University of Melbourne: *See—*
Siviour, Neil Graham; Pearson, Grant Marshall; and Cullen, Geoffrey Victor, 3,892,661.
Uno, Naoyuki; and Katsuhiko, Namura, to Asahi Kogaku Kogyo Kabushiki Kaisha. Single lens reflex camera mirror and diaphragm adjusting mechanism. 3,893,141, Cl. 354-156.000.
Upjohn Company, The: *See—*
Birkenmeyer, Robert D., 3,892,729.
Birkenmeyer, Robert D., 3,892,730.
Hajek, James D.; and Steele, Howard R., 3,892,634.
Hester, Jackson B., Jr., 3,892,763.
Magerlein, Barney J., 3,892,795.
Yankee, Ernest W., 3,892,792.
Urdal, Jan: *See—*
Malavazos, Arthur J., deceased; Malavazos, Gregory A., administrator; and Urdal, Jan, 3,892,355.
Usami, Hiroshi: *See—*
Inaba, Seiuemon; Shimizu, Kanryo; Hashimoto, Yoshihiro; Usami, Hiroshi; and Amemiya, Youichi, 3,893,011.
USM Corporation: *See—*
Bragole, Robert A., 3,892,885.
Utamura, Motoaki: *See—*
Naitou, Masanori; Nakano, Hiraku; Kashiwai, Shinichi; Satou, Chikara; and Utamura, Motoaki, 3,892,205.
Vacek, Jan, to International Standard Electric Corporation. System for substantially eliminating the fundamental and harmonics of a ripple voltage or current. 3,893,014, Cl. 321-9.00R.
Vachon, Patrick Alban, to Bell Telephone Laboratories, Incorporated. Active hybrid sidetone producing circuitry for sidetoneless telephone. 3,892,924, Cl. 179-15.0BY.
Vajna, Eugenio: *See—*
Arrighetti, Sergio; Cesca, Sebastiano; Ghetti, Giuseppe; and Vajna, Eugenio, 3,892,712.
Valcor Engineering Corporation: *See—*
Gold, Joseph; Kim-Eng, Edward; and Plante, Paul Emile, 3,893,191.
Van Amerongen, Edward; Beall, Glenn Lee; Clark, John Charles; and Reilly, Richard Joseph, to Respiratory Care, Inc. Multi-use inhalation therapy apparatus. 3,892,235, Cl. 128-194.000.
Van Assendelft, Leendert; Van Der Kloot, Jacob M.; Van 'T Sant, Antonie; and Spekle, Hendrikus J., to Organon Teknika B.V. Blood dialyzer of the coil type. 3,892,664, Cl. 210-321.000.
van den Bussche, Willem: *See—*
Wessels, Johannes Hendrik; and van den Bussche, Willem, 3,893,163.
van der Burg, Willem Jacob, to Akzona Incorporated. Pyrimidinodibenzo-azepine,-oxazepine,-thiazepine and diazepine derivatives. 3,892,695, Cl. 260-251.00A.
van der Gaag, Cornelis, to N.V. Industrieele Handelscombinatie Holland. Hinged pipe joint. 3,892,430, Cl. 285-31.000.
Van Der Kloot, Jacob M.: *See—*
Van Assendelft, Leendert; Van Der Kloot, Jacob M.; Van 'T Sant, Antonie; and Spekle, Hendrikus J., 3,892,664.
van der Ploeg, Arie: *See—*
Beunk, Gerrit J.; and van der Ploeg, Arie, 3,893,057.
Van der Winden, Johannes Bernardus, to Konishiroku Photo Industry Co., Ltd. Rotary screen tensioner for single sided drive. 3,892,176, Cl. 101-116.000.
Van Droogenbroek, Jean Francois. Hairdressing instrument. 3,892,943, Cl. 219-222.000.
Vanek, Stanley Donald, to Nicholson Manufacturing Company. Chipper bit and holder. 3,892,265, Cl. 144-230.000.
Vankuik, Dirk J.; and Wilcox, Glae F., to Steelcase Inc. Wiring access cover. 3,892,095, Cl. 52-221.000.
Van Leer, Richard A.: *See—*
Budworth, Ronald L.; and Van Leer, Richard A., 3,892,915.
Van Poucke, Raphael Karel; and De Cat, Arthur Henri, to Agfa-Gevaert N.V. Photographic water-insoluble compounds having a hydrophobic diffusion-fast substituent. 3,892,576, Cl. 96-100.000.
Van Santen, Johannes Gerrit: *See—*
Bosselaar, Cornelis Albertus; Klaver, Olof Erik Hans; Verwey, Jan Florus; and Van Santen, Johannes Gerrit, 3,893,151.
Van 'T Sant, Antonie: *See—*
Van Assendelft, Leendert; Van Der Kloot, Jacob M.; Van 'T Sant, Antonie; and Spekle, Hendrikus J., 3,892,664.
Van Zyl, Petrus Corneluis, to Spreadall (Proprietary) Limited. Articles of cutlery, paint scraper and the like. 3,892,024, Cl. 30-140.000.
Varen, Viktor Viktorovich: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.
Vasiliev, Valentin Alexandrovich: *See—*
Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.
Vassallo, Helen G.: *See—*
Adams, Herbert J. F.; Blair, Murray R., Jr.; Boyes, Robert N.; Lebeaux, Maxim I.; and Vassallo, Helen G., 3,892,847.
Vaw Leichtmetall GmbH: *See—*
Bauer, Heinrich; Dorner, Karl-Heinz; Eberlin, Helmut; Kaulen, Hans; Pazurek, Werner; Richarz, Heinz; Taubman, Harro J.; and Wolf, Gerhard, 3,892,113.
Vear, John P.: *See—*
Hughes, Walter R.; Vear, John P.; and Swanson, Elmer G., 3,892,346.
VEB Nahmaschinenwerk Wittenberge: *See—*
Lienemann, Ernst, 3,892,193.
VEB Werk fur Fernsehelektronik: *See—*
Biermann, Manfred; Brauer, Bernd; Heidborn, Wolfgang; Monno, Bernd; and Thiessen, Klaus, 3,892,471.
Veeder Industries, Inc.: *See—*
Nowak, Walter J., 3,893,059.
Veenendaal, Cornelis Teunis, to Tektronix, Inc. Electrical test probe. 3,893,027, Cl. 324-72.500.
Velinsky, Milton: *See—*
Wiegand, John R., 3,892,118.
Vensel, Richard R.; and Leach, Jerry A. Automobile alternator tester. 3,893,029, Cl. 324-158.0MG.
Verbeek, Wolfgang: *See—*
Winter, Gerhard; Verbeek, Wolfgang; and Mansmann, Manfred, 3,892,583.
Verdun, Pierre. Apparatus for preparing food. 3,892,365, Cl. 241-92.000.
Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH.: *See—*
Sittmann, Brigitte, 3,892,420.
Veron, Bernard, to Groupement pour les Activities Atomiques et Avancees. Horizontal manipulation arm. 3,892,317, Cl. 214-1.0BC.
Verwey, Jan Florus: *See—*
Bosselaar, Cornelis Albertus; Klaver, Olof Erik Hans; Verwey, Jan Florus; and Van Santen, Johannes Gerrit, 3,893,151.
Vestby, Gunnar W. Hip nail. 3,892,233, Cl. 128-92.0BA.
Victoria Machine Works: *See—*
Swoboda, John J., Jr.; and Boatman, Lawrence T., 3,892,196.
Viking Industries, Inc.: *See—*
Griffin, Wendell L., 3,892,464.
Villa, Alfonso: *See—*
Williams, Chauncey L.; Villa, Alfonso; and Humphrey, David H., 3,892,452.
Vinatzer, Alex: *See—*
Pallingen, Hans-G; Vinatzer, Alex; and Kapfinger, Wolfgang, 3,892,493.
Vladar, Gabor: *See—*
Vladar, Janos; Vladar nee Szepes, Ilona; Juhasz, Mihaly; Vladar, Peter; and Vladar, Gabor, 3,892,586.
Vladar, Janos; Vladar nee Szepes, Ilona; Juhasz, Mihaly; Vladar, Peter; and Vladar, Gabor, to Licencia Talalmanyokat Ertekesito Vallalat. Process for the preparation of building units. 3,892,586, Cl. 106-200.000.
Vladar nee Szepes, Ilona: *See—*
Vladar, Janos; Vladar nee Szepes, Ilona; Juhasz, Mihaly; Vladar, Peter; and Vladar, Gabor, 3,892,586.
Vladar, Peter: *See—*
Vladar, Janos; Vladar nee Szepes, Ilona; Juhasz, Mihaly; Vladar, Peter; and Vladar, Gabor, 3,892,586.
Vogt, Wilhelm: *See—*
Kandler, Joachim; Merkenich, Karl; Henning, Klaus; Vogt, Wilhelm; Auer, Eberhard; and Glaser, Hermann, 3,892,674.
Volker, Herbert: *See—*
Roeser, Helmut; Volker, Herbert; and Brand, Hans-Dieter, 3,892,536.
Volpin, Pavel Ilich: *See—*
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivano-

vich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.
Volter, Gunter: *See*—
Dahlmann, Julius; and Volter, Gunter, 3,892,262.
Vomberg, Rainer, to W. Schlafhorst & Co. Textile machine with periodically reciprocating parts. 3,892,138, Cl. 74-110.000.
von Beckmann, Helmuth, to Canron, Inc. Method and means for consolidating ballast. 3,892,183, Cl. 104-12.000.
Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, to Warner-Lambert Company. 1,2-Benzothiazines. 3,892,739, Cl. 260-243.00R.
Vyzkumny Ustav Bavlnarsky: *See*—
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Cap, Antonin; Ripka, Josef; and Junek, Jan, 3,892,063.
W. R. Grace & Co.: *See*—
Montgomery, Stewart R.; and Cheavens, Thomas H., 3,892,781.
Wood, Louis L., 3,892,696.
W. Schlafhorst & Co.: *See*—
Vomberg, Rainer, 3,892,138.
Wada, George: *See*—
Gralenski, Nicholas M.; Wada, George; and Bates, David J., 3,892,989.
Wada, Kenji: *See*—
Kaneda, Kazuyoshi; Suzuki, Yasushi; and Wada, Kenji, 3,892,636.
Wagner, Joseph R.; Miers, Jackson C.; and Becker, Robert, to United States of America, Agriculture. Process for preparing tomato juice of increased consistency. 3,892,877, Cl. 426-365.000.
Waisvisz, Jacques Maurits: *See*—
Struyk, Adrianus Petrus; and Waisvisz, Jacques Maurits, 3,892,850.
Wakabayashi, Toshio: *See*—
Taniguchi, Hiroyoshi; Wakabayashi, Toshio; Maeda, Takuma; and Ishimoto, Kenzi, 3,892,114.
Wakayama, Noriyuki: *See*—
Furukawa, Hikaru; Kumazawa, Shozo; and Wakayama, Noriyuki, 3,893,104.
Waller, Gustav M.; and Landmark, Kenneth L., to Amsted Industries Incorporated. Tread grinding wheel. 3,892,093, Cl. 51-372.000.
Warfield, James R. Collapsible umbrella with retractable fastening means. 3,892,251, Cl. 135-20.00R.
Warmont, Georges, to Ateliers de Constructions Electriques de Charlerol, (ACEC). Process of manufacturing a capacitor assembly. 3,892,023, Cl. 29-25.420.
Warner-Lambert Company: *See*—
Carroll, James J., 3,892,631.
Sircar, Jagadish C.; and Zinnes, Harold, 3,892,767.
Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,892,739.
Zinnes, Harold, 3,892,766.
Warner, Walter John. Ski-tote device. 3,892,343, Cl. 224-45.00S.
Warren, George A. Auto transporting passenger train car. 3,892,188, Cl. 105-368.00R.
Warren, Holland D., to Babcock & Wilcox Company, The. Neutron detector with gamma compensated cable. 3,892,969, Cl. 250-390.000.
Wass, James J.; and Meehan, Joseph G., to General Foods Corporation. Agitating whipper and method. 3,892,388, Cl. 259-5.000.
Wasserbaech, Eberhard E.: *See*—
Jackson, Richard C.; and Wasserbaech, Eberhard E., 3,892,419.
Wasserman, Philip D., to Tekelec, Inc. Integrating type analog-digital converter. 3,893,105, Cl. 340-347.0NT.
Watanabe, Hiroo; and Nagao, Minoru, to Omron Tateisi Electronics Co. Traffic signal control system. 3,893,067, Cl. 340-46.000.
Watanabe, Kiyoshi; Misumi, Akira; Onodera, Takayoshi; and Sunahara, Kazuo, to Hitachi, Ltd. Process for forming carbon coatings. 3,892,890, Cl. 427-249.000.
Watanabe, Noboru: *See*—
Sakairi, Hiroshi; Tezuka, Tetuyosi; and Watanabe, Noboru, 3,892,425.
Watanabe, Tetsuo: *See*—
Abe, Jinnosuke; Watanabe, Tetsuo; Nagata, Akiho; Ando, Takuji; Take, Teruo; Izumi, Rokuro; Noda, Toshiharu; and Matsuura, Kazuo, 3,892,732.
Watkins, Boyd G., to Microna Inc. Synchronized watch movement. 3,892,066, Cl. 58-28.00R.
Watkins-Johnson Company: *See*—
Gralenski, Nicholas M.; Wada, George; and Bates, David J., 3,892,989.
Silzars, Aris; and Ballonoff, Aaron, 3,893,157.
Watkins, Robert Vernon: *See*—
Fisk, Dale Edward; Homan, Merle Edward; Meiley, Charles Laurie; Reynolds, Zack Dwayne; Watkins, Robert Vernon; and Wiedmer, Fritz S., 3,892,925.
Watson, David G., to Textron Inc. Separable slide fastener and method of forming the same. 3,892,017, Cl. 24-205.11F.
Watson, John D., to Westinghouse Electric Corp. Reverse power flow relay. 3,893,009, Cl. 317-43.000.
Watts, George: *See*—
Wolstenholme, James Graham; Watts, George; and Hunter, Philip Robert, 3,892,077.
Watts, Ronald E.; and Errede, Louis A., to Minnesota Mining and Manufacturing Company. Method of modifying the surface properties of a substrate. 3,892,575, Cl. 96-84.00R.
Wawryszyn, Askold W.: *See*—
Reines, Jose; Platt, Eric G.; White, Stanley E.; Corrado, Joseph M.; and Wawryszyn, Askold W., 3,893,024.
Wdzieczkowski, Francis E., to SmithKline Corporation. Data acquisition system. 3,892,489, Cl. 356-157.000.
Weatherford Oil Tool (UK) Ltd.: *See*—
Fox, Roy K. N.; and Patterson, Rowan W., 3,892,140.
Weatherly, Arden R.; and Buckman, Carson F., to Continental Can Company, Inc. Method of making plastic articles having easily severable flash. 3,892,828, Cl. 264-89.000.
Wehr, Elsie Deshely: *See*—
Wehr, Robert D., deceased; and Wehr, Elsie Deshely, executrix, 3,892,504.
Wehr, Elsie Deshely, executrix: *See*—
Wehr, Robert D., deceased; and Wehr, Elsie Deshely, executrix, 3,892,504.
Wehr, Robert D., deceased; and by Wehr, Elsie Deshely, executrix, to Wehr, Elsie Deshely. Rotary pump. 3,892,504, Cl. 418-68.000.
Weidemann, Erwin, to Siemens Aktiengesellschaft. Resilient tubular member for holding a semiconductor device together under pressure. 3,893,162, Cl. 357-82.000.
Weigele, Manfred: *See*—
Felix, Arthur Martin; Toome, Voldemar; and Weigele, Manfred, 3,892,530.
Weil, Thomas A., to Raytheon Company. Forced voltage sharing in series-connected power inverters. 3,893,015, Cl. 321-27.00R.
Weinstock, Leonard M.; Tull, Roger J.; and Mulvey, Dennis M., to Merck & Co., Inc. Process for preparing 4-[3-(substituted amino)-2-hydroxypropoxy]-1,2,5-thiadiazoles. 3,892,744, Cl. 260-247.10H.
Weise, Carl A., deceased; and Weise, Helen C., administratrix. Internal combustion engine. 3,892,207, Cl. 123-32.0SA.
Weise, Helen C., administratrix: *See*—
Weise, Carl A., deceased; and Weise, Helen C., administratrix, 3,892,207.
Weisglass, Louis L., to Berkey Photo, Inc. Color correcting illumination system for color enlargers and the like. 3,892,482, Cl. 355-35.000.
Weisse, Guenter K., to Olin Corporation. Process for inhibiting microbial growth in water-based paints. 3,892,699, Cl. 260-29.6MM.
Welden, Robert P., Jr.; and Gorzegno, Walter P., to Foster Wheeler Corporation. Vapor generating system in which recirculated flue gases are injected into the combustion air stream of a steam generator. 3,892,191, Cl. 110-49.00R.
Welin-Berger, John Henrik Guy. Package for wet napkin. 3,892,310, Cl. 206-210.000.
Welkowsky, Murray S.: *See*—
Muntz, Eric P.; and Welkowsky, Murray S., 3,892,964.
Wells, Arthur B. Method and apparatus for heating oil pumped from an oil well. 3,892,276, Cl. 165-267.000.
Wells, Thomas Robert: *See*—
Phillips, Charles Edward, Jr.; and Wells, Thomas Robert, 3,892,141.
Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See*—
Eglin, Hans, 3,892,352.
Wessels, Johannes Hendrik; and van den Bussche, Willem, to U.S. Philips Corporation. Method of recording a video signal. 3,893,163, Cl. 358-4.000.
Westbrook, Edward L., Jr. Motorcycle carrier for wreckers. 3,892,321, Cl. 214-86.00A.
Western Electric Company, Incorporated: *See*—
Feeney, John D., 3,893,122.
Westinghouse Air Brake Company: *See*—
Hathaway, Homer L., 3,892,377.
Westinghouse Electric Corporation: *See*—
Alvino, William M.; and Frost, Lawrence W., 3,892,768.
Angello, Paul S., 3,893,073.
Dresner, Thomas L., 3,892,382.
Goedde, Edmund F.; Hoover, Gary D.; and Barakauskas, Edward J., 3,892,194.
Gunderlock, Richard P.; and Knutzen, Ted H., 3,892,497.
Haley, Paul H., 3,892,978.
Keto, August I., 3,892,461.
Miller, Lewis J.; and Coleman, William H., 3,892,500.
Neuner, James A., 3,892,954.
Neuner, James A.; and Boomgaard, Dirk J., 3,893,090.
Page, Derrick J.; and Roberts, John S., 3,893,153.
Richards, Edward L.; and Cametti, George M., 3,892,934.
Salvati, John G.; and Ricci, Louis N., 3,893,050.
Smith, Andrew W., Jr., 3,892,112.
Strickland, William A., Jr.; and Hinman, Walter L., Jr., 3,893,008.
Thornburg, Donald R.; and Foster, Karl, 3,892,604.
Thornburg, Donald R., 3,892,605.
Watson, John D., 3,893,009.
Williams, David W.; and Peyton, Phillip L., 3,893,147.
Yannone, Robert A.; and Shields, James J., 3,892,975.
Westmoreland, Julius C. Electrical connector assembly. 3,892,456, Cl. 339-40.000.
White, Eugene B., Jr. Rail traction vehicle. 3,892,187, Cl. 105-75.000.
White Farm Equipment Company: *See*—
Bruni, Mario, 3,892,285.
White, James A.; Chesluk, Ralph P.; and Platte, Howard J., to Texaco Inc. Vapor space corrosion inhibited compositions. 3,892,670, Cl. 252-34.700.
White, John R.; and Hogan, James M., to Goodyear Tire & Rubber Company, The. Polyurethane structural member. 3,892,691, Cl. 260-2.5AM.

White, Stanley E.: *See*—
Reines, Jose; Platt, Eric G.; White, Stanley E.; Corrado, Joseph M.; and Wawryszyn, Askold W., 3,893,024.

White-Westinghouse Corporation: *See*—
Jacobsen, Jerome G., Jr., 3,892,048.

Whited, Charles A., to Xerox Corporation. Thermal chamber for a developability regulating apparatus. 3,892,962, Cl. 250-227.000.

Whitley, Andrew. Defoliator mechanism. 3,892,061, Cl. 56-27.500.

Whitman, Edward C.; and Blake, George B., to United States of America, Navy. Lock indicator for phase-locked loops. 3,893,042, Cl. 331-55.000.

Whitworth, Clyde Jesse, Jr.: *See*—
Koleske, Joseph Victor; Whitworth, Clyde Jesse, Jr.; and Lundberg, Robert Dean, 3,892,821.

Widigs, Sven Holger. Wrapping of articles in a tubular wrapping material. 3,892,059, Cl. 53-29.000.

Wiedenmann, Walter, to Eheim, Gunther. Home fish-tank filter construction. 3,892,663, Cl. 210-169.000.

Wieder, Horst K. Loudspeaker enclosure. 3,892,930, Cl. 179-179.000.

Wiedmer, Fritz S.: *See*—
Fisk, Dale Edward; Homan, Merle Edward; Meiley, Charles Laurie; Reynolds, Zack Dwayne; Watkins, Robert Vernon; and Wiedmer, Fritz S., 3,892,925.

Wiegand, John R., to Velinsky, Milton; and Wiegand, John R., part interest to each. Method of manufacturing bistable magnetic device. 3,892,118, Cl. 72-371.000.

Wilcox, Albert F.: *See*—
Mees, Robert D.; Mittermaier, Armin F.; and Wilcox, Albert F., 3,892,115.

Wilcox, Glae F.: *See*—
Vankuik, Dirk J.; and Wilcox, Glae F., 3,892,095.

Wiley, Mark H., to Byron Jackson Inc. Adjustable power spinning tong. 3,892,148, Cl. 81-57.180.

Wilhelm, Frederick C., to Universal Oil Products Company. Hydrocarbon conversion with a multimetallic catalytic composite. 3,892,657, Cl. 208-139.000.

Wilhelms, Rolf-Ernst: *See*—
Scharfe, Gerhard; and Wilhelms, Rolf-Ernst, 3,892,818.

Wilken, Irvin D.: *See*—
Hickling, Robert; Posey, Joe W.; and Wilken, Irvin D., 3,892,215.

Willcox, Frederick P. Type font changing mechanism and controls. 3,892,303, Cl. 197-18.000.

Willhite, Charles C., to Bell Telephone Laboratories, Incorporated. Smoothing circuits. 3,893,034, Cl. 328-71.000.

William H. Rorer, Inc.: *See*—
Diamond, Julius; and Tsuei, Ching Tan, 3,892,803.
Diamond, Julius; and Douglas, George Henry, 3,892,804.

Williams, Chauncey L.; Villa, Alfonso; and Humphrey, David H., to Duraform Inc. Modular cabinet assembly. 3,892,452, Cl. 312-330.000.

Williams, Clark R., to Texas Instruments Incorporated. Regulator with bipolar transistors. 3,893,017, Cl. 323-4.000.

Williams, David W.; and Peyton, Phillip L., to Westinghouse Electric Corp. Multistate varactor. 3,893,147, Cl. 357-14.000.

Williams, Norman C.: *See*—
Taylor, Duane F.; Everett, Richard C.; Everett, Harry F.; and Williams, Norman C., 3,892,229.

Wilson, Ian S.: *See*—
McGrew, John P.; Foster, Larry W.; Katzer, John David; and Wilson, Ian S., 3,892,516.

Wilson, Richard A.; and Giacino, Christopher, to International Flavors & Fragrances Inc. Flavoring with sulfur containing compounds. 3,892,878, Cl. 426-534.000.

Wilson, Wayne Dee: *See*—
Slawsky, Zaka I.; and Wilson, Wayne Dee, 3,893,061.

Winget, Clifford L.; Doherty, Kenneth W.; and Wirsen, Carl O., to United States of America, Navy. Deep sea microbiological sampling and culturing apparatus and method. 3,892,130, Cl. 73-425.40R.

Winkler, Alfred; Geisslinger, Wolfgang; and Ungnadner, Peter, to Agfa-Gevaert Aktiengesellschaft. Slide projector for use with ring-shaped magazines. 3,892,479, Cl. 353-117.000.

Winkler, Alfred; Engelsmann, Dieter; and Schroder, Rolf, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus with expansible housing. 3,893,139, Cl. 354-288.000.

Winkler, Werner: *See*—
Heindke, Armin; Mutz, Gerhard; Hirt, Albert; and Winkler, Werner, 3,892,175.

Winter, Gerhard; Verbeek, Wolfgang; and Mansmann, Manfred, to Bayer Aktiengesellschaft. Production of shaped articles of silicon carbide and silicon nitride. 3,892,583, Cl. 106-55.000.

Winterfeldt, Ekkehard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 5,6-Benzo-γ-pyridone derivatives. 3,892,754, Cl. 260-287.00R.

Wirsen, Carl O.: *See*—
Winget, Clifford L.; Doherty, Kenneth W.; and Wirsen, Carl O., 3,892,130.

Wolf, Gerhard: *See*—
Bauer, Heinrich; Dorner, Karl-Heinz; Eberlin, Helmut; Kaulen, Hans; Pazurek, Werner; Richarz, Heinz; Taubman, Harro J.; and Wolf, Gerhard, 3,892,113.

Wolf, Josef: *See*—
Mroczek, Werner; and Wolf, Josef, 3,893,154.

Wolf, Milton: *See*—
Sellstedt, John H.; and Wolf, Milton, 3,892,746.

Wolfe, James R.: *See*—
Borg, Richard J.; Lai, David Y. F.; Riley, Neil R.; and Wolfe, James R., 3,892,644.

Wolff, Stephen S.: *See*—
Yang, Joseph H.; and Wolff, Stephen S., 3,893,039.

Wolfgram, Franklin C., to United States of America, Army. Brightness contour plotter. 3,892,052, Cl. 356-121.000.

Wolstenholme, James Graham; Watts, George; and Hunter, Philip Robert. Insole. 3,892,077, Cl. 36-44.000.

Woo, Gar Lok, to Chevron Research Company. Cellular products produced by foaming and cross-linking aromatic polysulfides. 3,892,686, Cl. 260-2.50A.

Wood, Francis William, to Lever Brothers Company. Artificial fruit and process therefor. 3,892,870, Cl. 426-573.000.

Wood, Louis L., to W. R. Grace & Co. Polyureas and preparation thereof. 3,892,696, Cl. 260-29.2TN.

Wood, Orin Lew: *See*—
Thorne, Gale H.; Wood, Orin Lew; and Knudson, Kay L., 3,892,628.

Woodall, Jerry M.: *See*—
Dumke, William P.; and Woodall, Jerry M., 3,893,044.

Woodard, Robert. Method and apparatus for doing afro hairdos. 3,892,246, Cl. 132-7.000.

Woodnutt, John Peter. Switch-controlled continuously progressive dimmer circuit. 3,893,002, Cl. 315-291.000.

Worgan, Gordon Peter; and Lane, Gordon John, to Rolls-Royce (Composite Materials). Means for fastening of sandwich panels to supports. 3,892,099, Cl. 52-479.000.

Wortham, Joseph S., to Allied Chemical Corporation. Animal litter resistant to ammonia odor formation. 3,892,846, Cl. 424-76.000.

Wright, Carl Leonard, to FMC Corporation. Inhibition of diallylic phthalate polymer compositions. 3,892,718, Cl. 260-78.4UA.

Wright, Charles H.; and Pastor, Gerald R., to United States of America, Interior. Dual temperature coal solvation process. 3,892,654, Cl. 208-8.000.

Wright, George J.: *See*—
Hook, Robert H.; and Wright, George J., 3,892,776.

Wuerker, Ralph F.; and Heflinger, Lee O., to TRW Inc. Holographic contouring with a multifrequency laser. 3,892,487, Cl. 356-109.000.

Wulc, Stanley S., to Total Enterprises, Inc. Random motion suction cleaner. 3,892,282, Cl. 180-6.500.

Wynne, James J.: *See*—
Hodgson, Rodney T.; Lankard, John R.; Sorokin, Peter P.; and Wynne, James J., 3,892,979.

Xerox Corporation: *See*—
Ciccarelli, Roger N.; and Ims, Dale R., 3,892,567.
Hawley, Jack S.; Bates, Roger D.; and Thacker, Charles P., 3,892,963.
Monahan, Alan R., 3,892,180.
Monahan, Alan R., 3,892,570.
Perel, Julius; and Mahoney, John F., 3,893,131.
Solomon, Abby R., 3,893,175.
Whited, Charles A., 3,892,962.

Xonics, Inc.: *See*—
Balser, Martin, 3,893,060.
Muntz, Eric P.; and Welkowsky, Murray S., 3,892,964.

Yadon, Paul Edward: *See*—
Schlottmann, Roy Otto; and Yadon, Paul Edward, 3,892,360.

Yamabe, Masaaki: *See*—
Tabata, Yoneho; Ukihashi, Hiroshi; and Yamabe, Masaaki, 3,892,641.

Yamada, Takeo; Kunioka, Kazuo; Sugiyama, Shunichi; and Teramoto, Toyokazu, to Nippon Kokan Kabushiki Kaisha. Evaporative cooling apparatus for cooling stave. 3,892,392, Cl. 266-32.000.

Yamagata, Mineo: *See*—
Toogoo, Kazushi; Yamagata, Mineo; and Akamatsu, Akira, 3,892,895.

Yamaguchi, Kanemichi: *See*—
Komatsu, Yoshihiro; and Yamaguchi, Kanemichi, 3,892,058.

Yamamoto, Hiroshi; Kato, Shoichi; Ohgushi, Koji; and Tokumitsu, Iwao, to Nippon Kayaku Co., Ltd. Method for combatting rodents and rodenticidal compositions. 3,892,864, Cl. 424-322.000.

Yamanaka, Teruo; and Sato, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Method and device for anticipating a collision. 3,893,114, Cl. 343-7.0ED.

Yamazaki, Eiichi, to Hitachi, Ltd. Post-deflection acceleration type color picture tube. 3,892,995, Cl. 313-408.000.

Yang, Joseph H.; and Wolff, Stephen S., to United States of America, Navy. Two-channel phase-locked loop. 3,893,039, Cl. 331-12.000.

Yankee, Ernest W., to Upjohn Company, The. Process for the synthesis of PGE compounds from PGF compounds. 3,892,792, Cl. 260-448.80R.

Yannone, Robert A.; and Shields, James J., to Westinghouse Electric Corp. Gas turbine power plant control apparatus having improved monitoring and alarm elements. 3,892,975, Cl. 290-40.000.

Yardney International Corporation: *See*—
Gunther, Ronald G., 3,892,590.

Yasoshima, Hiroshi, to Shibaura Engineering Works, Ltd. Electric control for an electric motor operated nut fastening tool. 3,892,146, Cl. 81-52.40R.

Yasui, Shinjiro. Panel core. 3,892,898, Cl. 428-116.000.

Yasumoto, Michio. Multi-bladed wiper for windshield-wiper assembly. 3,892,006, Cl. 15-250.220.

Yata, Kintaro; and Kuramoto, Yoshio, to Minolta Camera Kabushiki Kaisha. Automatic exposure time control apparatus for camera. 3,893,140, Cl. 354-50.000.
Yonas, Gerold: *See*—
Freeman, John R.; Poukey, James W.; Shope, Steven L.; and Yonas, Gerold, 3,892,970.
Yoos, Frederick W., Jr. Rotary engine operating on refrigeration cycle. 3,892,074, Cl. 60-669.000.
Yoshida, Yoshitaka: *See*—
Kimbara, Motoyasu; and Yoshida, Yoshitaka, 3,892,221.
Yoshii, Tetsuji, to Matsushita Electric Industrial Co., Ltd. Magnetic recorder with movable head base. 3,893,186, Cl. 360-105.000.
Yoshizaki, Akira: *See*—
Matsui, Toru; Yoshizaki, Akira; and Kogure, Yasuzi, 3,893,135.
Yost, Robert L., to Dues, Joseph J. Method for forming a cored concrete slab. 3,892,826, Cl. 264-72.000.
Young, Jing Jue: *See*—
Bechly, Fred Lorin; and Young, Jing Jue, 3,893,168.
Young, Richard: *See*—
Smith, Geoffrey Allan; and Young, Richard, 3,892,893.
Yuasa, Yoshio: *See*—
Uetsuki, Toshio; Okajima, Mitsuo; and Yuasa, Yoshio, 3,892,490.
Zacharias, Ellis M., Jr.: *See*—
Cirulis, Uldis; and Zacharias, Ellis M., Jr., 3,892,127.
Zadorozhny, Vasily Grigorievich: *See*—
Ilinkov, Dmitry Vladimirovich; Volpin, Pavel Ilich; Rumyantsev, Vasily Petrovich; Artemenko, Stanislav Arsenievich; Alivoivodich, Miro; Ragulina, Raisa Ivanovna; Zadorozhny, Vasily Grigorievich; Varen, Viktor Viktorovich; Emlin, Boris Ivanovich; Gasik, Mikhail Ivanovich; Khitrik, Spiridon Iosifovich; Klimkovich, Nikolai Semenovich; Novikov, Anatoly Yakovlevich; and Gasik, Ljudmila Ivanovna, 3,892,558.
Zaffaroni, Alejandro, to ALZA Corporation. Intrauterine contraceptive device for releasing steroid having double bond functionality. 3,892,842, Cl. 424-22.000.
Zedgenidze, Tengiz Grigorievich: *See*—
Arakelov, Mikhail Alexandrovich; Gersamia, Eduard Galaktionovich; Zedgenidze, Tengiz Grigorievich; and Nozadze, Gennady Pavlovich, 3,892,034.
Zenkoku Reitogyoniku Kyokai: *See*—
Furuta, Motohiro, 3,892,640.
Zia, Yee C. Vertical sanitary trap assembly for drain pipes. 3,892,257, Cl. 137-247.000.
Zimmerman, Fritz; and Pogrzeba, Hans-Joachim, to Steag AG. Reactor for pressure type gasification of coal. 3,892,542, Cl. 48-67.000.
Zinnes, Harold, to Warner-Lambert Company. Process for the preparation of 4-keto-1',2,3,4-tetrahydrocarbazole. 3,892,766, Cl. 260-315.000.
Zinnes, Harold: *See*—
Sircar, Jagadish C.; and Zinnes, Harold, 3,892,767.
Zlafop Pri Ban of Bulgaria: *See*—
Simeonov, Vasil Dragomirov; Mednikarov, Borislav Dimitrov; and Malinowski, Jordan Petrov, 3,892,571.
Zobach, Mark Iosifovich: *See*—
Babitsky, Boris Davidovich; Beresnev, Vadim Nikolaevich; Bolshakova, Tatyana Georgievna; Buzina, Natalya Anatolievna; Vasiliev, Valentin Alexandrovich; Kalinicheva, Nadezhda Andreevna; Kormer, Vitaly Abramovich; Zobach, Mark Iosifovich; Radchenko, Ivan Ignatievich; and Khrustaleva, Taisiya Danilovna, 3,892,722.
Zoepfl, Jack A. Athletic timer. 3,893,099, Cl. 340-323.000.
Zollinger, Otto. Yarn tensioning device. 3,892,371, Cl. 242-152.100.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 1ST DAY OF JULY, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Greene, Robin N. Novel hydroxyl-terminated polymers. T936,001, 7–1–75, Cl. 260–635.
Hill, James F. Hydroxyl-terminated chloroprene polymers. T936,002, 7–1–75, Cl. 260–77.
Kramer, Ronald R. High tenacity crimped tow and process. T936,005, 7–1–75, Cl. 28–72.140.
Ward, James J.: *See*—
Watkins, Windell C., and Ward. T936,003.
Watkins, Windell C., and J. J. Ward. Stabilization of alpha, alpha-disubstituted-beta-propiolactones. T936,003, 7–1–75, Cl. 260–343.900.
Willis, Alan E. Solid state watch display. T936,004, 7–1–75, Cl. 58–50.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF JULY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Cole, Richard I.: *See*—
Holcroft, Donald E., Cole, Milligan, and Greenhalgh. Re. 28,459.
Cole, Richard I., D. E. Holcroft, E. A. Milligan, and S. Greenhalgh, to Scott Paper Co. Transpiration drying and embossing of wet paper webs. Re. 28,459, 7–1–75, Cl. 34—6.
Dawson, James A., to McDonnell Douglas Corp. Coupling fitting for connecting two pipes. Re. 28,457, 7–1–75, Cl. 285—354.
Denier, Dennis J.: *See*—
Denier, Howard H., D. J., and Hedger. Re. 28,455.
Denier, Howard H., D. J., and T. Hedger. Portable elevator working and load-lifting platform. Re. 28,455, 7–1–75, Cl. 182—16.
Denier, Howard H.: *See*—
Denier, Dennis J., H. H., and Hedger. Re. 28,455.
Exxon Research & Engineering Co.: *See*—
Langer, Arthur W., Jr., and Whitney. Re. 28,456.
Greenhalgh, Samuel: *See*—
Cole, Richard I., Holcroft, Milligan, and Greenhalgh. Re. 28,459.
Grand-City Container Corp.: *See*—
Rous, Benjamin. Re. 28,460.
Halstead, Earle W., to Tru-Pitch, Inc. Ball throwing machine. Re. 28,462. 7–1–75, Cl. 124—1.
Holcroft, Donald E.: *See*—
Cole, Richard I., Holcroft, Milligan, and Greenhalgh. Re. 28,459.
Hydro-Clear Corp.: *See*—
Ross, David S. Re. 28,458.
Langer, Arthur W., Jr., and T. A. Whitney, to Exxon Research & Engineering Co. Inorganic lithium amine complexes. Re. 28,456, 7–1–75, Cl. 260—563.
Lemelson, Jerome H. Tape cartridge and reader. Re. 28,461, 7–1–75, Cl. 235—61.11.
McDonnell Douglas Corp.: *See*—
Dawson, James A. Re. 28,457.
Milligan, Edward A.: *See*—
Cole, Richard I., Holcroft, Milligan, and Greenhalgh. Re. 28,459.
Ross, David S., to Hydro-Clear Corp. Apparatus and method of filtering solids from a liquid effluent. Re. 28,458, 7–1–75, Cl. 210—80.
Rous, Benjamin, by Grand-City Container Corp., assignee, Stone Container Corp. Carton. Re. 28,460, 7–1–75, Cl. 206—424.
Scott Paper Co.: *See*—
Cole, Richard I, Holcroft, Milligan, and Greenhalgh. Re. 28,459.
Stone Container Corp.: *See*—
Rous, Benjamin. Re. 28,460.
Tru-Pitch, Inc.: *See*—
Halstead, Earle W. Re. 28,462.
Whitney, Thomas A.: *See*—
Langer, Arthur W., Jr., and Whitney. Re. 28,456.

LIST OF PLANT PATENTEES

DeGroot, Constant, to Sheridan Nurseries Ltd. Boxwood plant. 3,736, 7–1–75, Cl. 54.
Ecke, Paul, Jr.: *See*—
Wooldridge, Charles E. 3,738.
Kendall, Harold E. Avocado tree. 3,737, 7–1–75, Cl. 44.
Sheridan Nurseries Ltd.: *See*—
DeGroot, Constant. 3,736.
Wooldridge, Charles E., to Paul Ecke, Jr. Poinsettia plant. 3,738, 7–1–75, Cl. 86.

LIST OF DESIGN PATENTEES

Agarwala, Bhaskar K., to Everest & Jennings, Inc. Heater, circulator, and temperature control for a fluid-type heating pad. 235,646, 7–1–75, Cl. D23—77.
Allen, William G., Jr. Surgical strue remover. 235,688, 7–1–75, Cl. D83—12.
Amerock Corp.: *See*—
Tegner, Raymond U. H. 235,600.
Tegner, Raymond U. H. 235,615.
Tegner, Raymond U. H. 235,616.
Tegner, Raymond U. H. 235,617.
Tegner, Raymond, U. H. 235,618.
Anderson, Victor F., to Shell Oil Co. Air freshener holder or similar article. 235,648, 7–1–75, Cl. D23—150.
Balls 'N' All, Inc.: *See*—
Tibbs, Clarence V. 235,693.
Barad, Valerie, to Theodor Mfg. Corp. Handbag. 235,690, 7–1–75, Cl. D87—3.
Barad, Valerie, to Theodor Mfg. Corp. Handbag. 235,691, 7–1–75, Cl. D87—3.
Barrett, Bernard R. Toy kite. 235,670, 7–1–75, Cl. D34—15.
Benty, John L., D. DeFano, and R. I. Kallman, to Clairol Inc. Mak-up mirror. 235,689, 7–1–75, Cl. D86—10.
Benty, John L., and D. Nickles, to The Gillette Co. Shave cream dispenser. 235,599, 7–1–75, Cl. D6—95.
Birnbaum, Leonard V., to Burwood Products Co. Table. 235,596, 7–1–75, Cl. D6—177.
Birnie, George D., to Brunswick Corp. Archery finger glove. 235,589, 7–1–75, Cl. D2—361.
Blake, Frederick D. Canoe. 235,632, 7–1–75, Cl. D12—63.
Block China Corp.: *See*—
Gulotta, Gerald. 235,611.

Bozich, Anton J., to Malton Electric Co. Housing for electrical unit. 235,653, 7–1–75, Cl. D26—5.

Bragg, Marion, to Kendall Co. Surgical mask. 235,687, 7–1–75, Cl. D83—1.

Brunswick Corp.: *See*—
Le Mieux, Robert W. 235,669.
Birnie, George D. 235,589.

Burroughs Corp.: *See*—
Clayton, Richard G. 235,637.

Burwood Products Co.: *See*—
Birnbaum, Leonard V. 235,596.

Calder, Don L. Hand operated cultivator. 235,674, 7–1–75, Cl. D35—2.

Carl Zeiss-Stiftung: *See*—
Michel, Kurt. 235,684.

Cawrse Dairy, Inc.: *See*—
Cawrse, Richard S. 235,621.

Cawrse, Richard S., to Cawrse Dairy, Inc. Packaging container for food or the like. 235,621, 7–1–75, Cl. D9—219.

CBS, Inc.: *See*—
Moustakas, Matthew. 235,675.

Chestnut, M. Gaines, to Outdoor Sports Industries, Inc. Rifle-scope. 235,685, 7–1–75, Cl. D57—1.

Christie, Cornelius W., Jr.: *See*—
Culbertson, Richard, and Christie. 235,660.

Clairol Inc.: *See*—
Benty, John L., DeFano, and Kallman. 235,689.

Clayton, Richard G., to Burroughs Corp. Exterior molded panel for data processing units. 235,637, 7–1–75, Cl. D13—1.

Clement, Carl J., F. H. Stengel, and K. S. Campbell, to Xerox Corp. Display device. 235,655, 7–1–75, Cl. D26—5.

Cohen, Maurice. Size tag for garment hanger. 235,639, 7–1–75, Cl. D19—13.

Cohn, Gerald, to Remember When Sweet Shoppe, Inc. Display carousel. 235,594, 7–1–75, Cl. D6—154.

Cooper, Cecil L. Vehicle mud guard. 235,633, 7–1–75, Cl. D12—185.

Corning Glass Works: *See*—
Kiernan, Alice, Luzier, and Mirow. 235,604.

Covey, Laird F., and W. J. Hildebrandt, to The Stanley Works. Marking gauge. 235,626, 7–1–75, Cl. D10—71.

Crabbe, David K., L. F. Halio, and J. W. Carroll, to Digital Equipment Corp. Display terminal. 235,654, 7–1–75, Cl. D26—5.

Culbertson, Richard, and C. W. Christie, Jr., to General Electric Co. Combined portable 8-track tape player and AM/FM tuner. 235,660, 7–1–75, Cl. D26—14.

Curtis, Gerald J. Adjustable trim tab for leveling a boat. 235,635, 7–1–75, Cl. D12—70.

Dahl, G. W., Co., Inc.: *See*—
Erickson, Linwood P. 235,641.
Erickson, Linwood P. 235,642.

Daniels, Kenneth M. Adjustable support for a spray nozzle or the like. 235,612, 7–1–75, Cl. D8—72.

Delta Transnational, Inc.: *See*—
Studer, John E., Jr. 235,625.

Denki Onkyo Co., Ltd.: *See*—
Simizu, Haruo, and Ueda. 235,657.

Deschamps, Robert L., to Shure Brothers, Inc. Phonograph cartridge. 235,661, 7–1–75, Cl. D26—14.

Digital Equipment Corp.: *See*—
Crabbe, David K., Halio, and Carroll. 235,654.

Doglioth, Amilcare, to P. Ferrero & C. S.p.A. Display stand. 235,595, 7–1–75, Cl. D6—24.

Doyel, John S. Magnetic window cleaning device. 235,603, 7–1–75, Cl. D7—179.

Ebata, Takemi, K. Miki, and Y. Hattori, to Matsushita Electric Industrial Co. Tape recorder. 235,659, 7–1–75, Cl. D26—14.

Educational Design Associates: *See*—
Root, Charles B. 235,672.
Root, Charles B. 235,673.

Environment/One Corp.: *See*—
Peters, Philip H., Jr., and Matrone. 235,645.

Erickson, Linwood P., to G. W. Dahl Co., Inc. Actuator for a valve. 235,641, 7–1–75, Cl. D23—19.

Erickson, Linwood P., to G. W. Dahl Co., Inc. Actuator for a valve. 235,642, 7–1–75, Cl. D23—19.

Everest & Jennings, Inc.: *See*—
Agarwala, Bhaskar K. 235,646.

Florida Pneumatic Mfg. Corp.: *See*—
Taylor, James O. 235,614.

Foremost-McKesson, Inc.: *See*—
Templin, Wallace D. 235,624.

Forseth, Arthur E. Rodent protective bottom shield for telephone pedestal. 235,620, 7–1–75, Cl. D8—263.

Franklin, Lester K., deceased, by Mildred P. Franklin. Clock radio. 235,679, 7–1–75, Cl. D56—7.

Franklin Mildred P.: *See*—
Franklin, Lester K. 235,679.

Fujiwara, Tomio, and B. Mishiro, to Matsushita Electric Industrial Co. Clock-radio. 235,680, 7–1–75, Cl. D56—4.

Funaziki, Yasuhiko, and K. Marumoto, to Matsushita Electric Industrial Co. Combined amplifier and cassette tape recorder. 235,665, 7–1–75, Cl. D26—14.1.

General Electric Co.: *See*—
Culbertson, Richard, and Christie. 235,660.

General Motors Corp.: *See*—
Sheeley, David D. 235,605.
Petkwitz, Paul E. 235,606.

Giguere, Andre N., and R. A. Thibodeau. Casing for a grill. 235,610, 7–1–75, Cl. D7—88.

Gillette Co., The: *See*—
Peterson, Theodore R. 235,598.
Benty, John L., and Nickles. 235,599.

Girling Ltd.: *See*—
Rath, Heinrich B. 235,630.

Goldberg, Gerald M. Outdoor light fixture. 235,677, 7–1–75, Cl. D48—31.

Goldberg, Gerald M. Outdoor light fixture. 235,678, 7–1–75, Cl. D48—31.

Guiotta, Gerald, to Block China Corp. Bowl. 235,611, 7–1–75, Cl. D7—23.

Gutowski, Wojciech S.: *See*—
Olson, John D., and Gutowski. 235,613.

Haddad, Karen A. Model of a birth canal. 235,650, 7–1–75, Cl. D10—62.

Halio, Leonard F.: *See*—
Crabbe, David K., Halio, and Carroll. 235,654.

Hall, William L. Hatch cover with hand hold for top of railway grain car. 235,634, 7–1–75, Cl. D12—43.

Handy Andy Specialty Co., Inc.: *See*—
Sahloff, Willard H. 235,602.

Herring, John L. Storage container for fishing hooks and leaders. 235,622, 7–1–75, Cl. D9—235.

Hideshima, Masatoshi, to Kabushiki Kaisha Ricoh. Teaching machine. 235,649, 7–1–75, Cl. D19—60.

Hildebrandt, William J.: *See*—
Covey, Laird F., and Hildebrandt. 235,626.

Hill, Kenneth D., to World Carpets. Carpets. 235,694, 7–1–75, Cl. D92—4.

Hill, Kenneth D., to World Carpets. Carpet. 235,695, 7–1–75, Cl. D92—4.

Hills, William H. Fishing Lures. 235,640, 7–1–75, Cl. D22—27.

Hirano, Yukio: *See*—
Yoshida, Toshihiko, Hirano, and Toyoda. 235,608.

Hirasa, Hiroshi, to Matsushita Electric Industrial. Portable radio. 235,683, 7–1–75, Cl. D56—4.

House of Health, Inc.: *See*—
Loomis, Roland E. 235,597.

Howard, Arthur G. Plural wick-type dispenser assembly. 235,647, 7–1–75, Cl. D23—150.

Huff, Basil D. Bootee or similar article. 235,591, 7–1–75, Cl. D2—278.

Igo, Toshio, to Matsushita Electric Industrial Co. Combined amplifier and cassette tape recorder. 235,663, 7–1–75, Cl. D26—14.

Ikejima, Yoritaka, and T. Takagi, to Matsushita Electric Works, Ltd. Electric shaver. 235,697, 7–1–75, Cl. D95—3.

International Business Machines Corp.: *See*—
Kapper, Henry, and Sabella. 235,652.
Kapper, Henry, and Sabella. 235,656.
Kapper, Henry, and Sabella. 235,664.

Jukes, Norman A. Suppressor for internal combustion engine ignition systems. 235,651, 7–1–75, Cl. D26—1.

Kabushiki Kaisha Ricoh: *See*—
Hideshima, Masatoshi. 235,649.

Kabushiki Kaisha TADAPURA: *See*—
Teranishi, Takeo. 235,636.

Kapper, Henry, and E. J. Sabella, to International Business Machines Corp. Communications terminal. 235,652, 7–1–75, Cl. D26—5.

Kapper, Henry, and E. J. Sabella, to International Business Machines Corp. Terminal station. 235,656, 7–1–75, Cl. D26—5.

Kapper, Henry, and E. J. Sabella, to International Business Machines Corp. Workstation. 235,664, 7–1–75, Cl. D26—5.

Kawata, Yoshiaki, and T. Kawasaki, to Matsushita Electric Industrial Co. Microwave oven. 235,609, 7–1–75, Cl. D7—128.

Kawasaki, Tetsuo: *See*—
Kawata, Yoshiaki, and Kawasaki. 235,609.

Kenda Co., The: *See*—
Bragg, Marion. 235,687.

Keskes, Joan J. Ester display. 235,608, 7–1–75, Cl. D96—2.

Kiernan, Alice, P. A. Luzier, and G. Mirow, to Corning Glass Works. Saucepan or the like. 235,604, 7–1–75, Cl. D7—97.

Kikuchi, Hiroshi, A. Koshiro, and Y. Kawata, to Matsushita Electric Industrial Co. Microwave oven. 235,607, 7–1–75, Cl. D7—128.

Kirk, Norman. Curved hair brush. 235,592, 7–1–75, Cl. D4—31.

Kita, Robert M., and E. A. Rusch, to Shure Brothers Inc. Phonograph stylus assembly. 235,658, 7–1–75, Cl. D26—14.

Knoll International, Inc.: *See*—
Pearson, Maxwell E. 235,593.

Koshiro, Akiyoshi: *See*—
Kikuchi, Hiroshi, Koshiro, and Kawata. 235,607.

Krupski, Walter R. Razor handle. 235,696, 7–1–75, Cl. D95—3.

Le Mieux, Robert W., to Brunswick Corp. Game table. 235,669, 7–1–75, Cl. D34—5.

Lewis, Rick. Flowerpot holder. 235,601, 7–1–75, Cl. D6—113.

Lloveras, George T. Jug. 235,623, 7–1–75, Cl. D9—42.

Loomis, Roland E., to House of Health, Inc. Display stand. 235,597, 7–1–75, Cl. D6—24.

Luzier, Patricia A.: *See*—
Kiernan, Alice, Luzier, and Mirow. 235,604.

Malton Electric Co.: *See*—
Bozich, Anton J. 235,653.

Mansei Kogyo Kabushiki Kaisha: *See*—
Moriya, Mobuyoshi. 235,666.

Marumoto, Koji: *See*—
Funabiki, Yasuhiko, and Marumoto. 235,665.

Matrone, John L.: *See*—
Peters, Philip H., Jr., and Matrone. 235,645.

Matsumura, Nobumitsu, and B. Mishiro, to Matsushita Electric Industrial. Digital clock radio. 235,681, 7–1–75, Cl. D56—4.

Matsushita Electric Industrial Co.: *See*—
Kikuchi, Hiroshi, Koshiro, and Kawata. 235,607.
Yoshida, Toshihiko, Hirano, and Toyoda. 235,608.
Kawata, Yoshiaki, and Kawasaki. 235,609.
Ebata, Takemi, Miki, and Hattori. 235,659.
Igo, Toshio. 235,663.
Funabiki, Yasuhiko, and Marumoto. 235,665.
Fujiwara, Tomio, and Mishiro. 235,680.
Matsumura, Nobumitsu, and Mishiro. 235,681.
Hirasa, Hiroshi. 235,683.

Matsushita Electric Works, Ltd.: *See*—
Ikejima, Yoritaka, and Takagi. 235,697.

Michel, Kurt, to Carl Zeiss-Stiftung. Binocular microscope eyepiece. 235,684, 7–1–75, Cl. D57—1.
Miki, Kunishige: *See*—
Ebata, Takemi, Miki, and Hattori. 235,659.
Mishiro, Benito: *See*—
Fujiwara, Tomio, and Mishiro. 235,680.
Matsumura, Nobumitsu, and Mishiro. 235,681.
Moriya, Nobuyoshi, to Mansei Kogyo Kabushiki Kaisha. Cigarette lighter. 235,666, 7–1–75, Cl. D27—36.
Moustakas, Matthew, to CBS, Inc. Riding toy. 235,675, 7–1–75, Cl. D34—15.
Mox, Dana W., to Shure Brothers Inc. Microphone. 235,662, 7–1–75, Cl. D26—14.
Nasta Industries, Inc.: *See*—
Spiegel, Norman. 235,671.
Naumovski, Vera. Sport shirt. 235,590, 7–1–75, Cl. D2—208.
Nickles, Daniel: *See*—
Benty, John L., and Nickles. 235,599.
Nishigata, Goro, to Yehan Numata. Digital vernier caliper. 235,628, 7–1–75, Cl. D10—73.
Olson, John D., W. S. Gutowski, to The Stanley Works. Screw starter. 235,613, 7–1–75, Cl. D8—86.
Outdoor Sports Industries, Inc.: *See*—
Chestnut, M. Gaines. 235,685.
Oy Polykem AB: *See*—
Suuronen, Matti J. 235,638.
Pappas, Alexander. Pendant or the like. 235,676, 7–1–75, Cl. D45—16.
Pearson, Maxwell E., to Knoll International, Inc. Side chair. 235,593, 7–1–75, Cl. D6—30.
Peters, Philip H., Jr., and J. L. Matrone, to Environment/One Corp. Combined counter, sink, storage and induction heating electric cooking range unit. 235,645, 7–1–75, Cl. D23—50.
Peterson, Theodore R., to The Gillette Co. Shave cream dispenser. 235,598, 7–1–75, Cl. D6—95.
Petkwitz, Paul E., to General Motors Corp. Touch control panel for the control console of a domestic cooking appliance. 235,606, 7–1–75, Cl. D7—135.
P. Ferrero & C. S.p.A.: *See*—
Dogliotti, Amilcare. 235,595.
Rastegar, Roosevelt. Kitchen and storage unit for recreational vehicles. 235,644, 7–1–75, Cl. D23—50.
Rath, Heinrich B., to Girling Ltd. Disc brake friction pad assembly. 235,650, 7–1–75, Cl. D12—180.
Remember When Sweet Shoppe, Inc.: *See*—
Cohn, Gerald. 235,594.
Richardson-Merrell Inc.: *See*—
Schoenfeld, Stanley, and Skolnik. 235,686.
Root, Charles B., to Educational Design Associates. Puzzle toy. 235,672, 7–1–75, Cl. D34—15.
Root, Charles B., to Educational Design Associates. Puzzle toy. 235,673, 7–1–75, Cl. D34—15.
Rusch, Edward A.: *See*—
Kita, Robert M., and Rusch. 235,658.
Rushing, James L., and L. S. Shoulder bag. 235,692, 7–1–75, Cl. D87—3.
Rushing, Linda S.: *See*—
Rushing, James L., and L. S. 235,692.
Sabella, Edward J.: *See*—
Kapper, Henry, and Sabella. 235,652.
Kapper, Henry, and Sabella. 235,656.
Kapper, Henry, and Sabella. 235,664.
Sahloff, Willard H., to Handy Andy Specialty Co., Inc. Support for ashtrays, aerosol containers and other articles. 235,602, 7–1–75, Cl. D6—86.
Sato, Norio: *See*—
Shimano, Keizo, and Sato. 235,631.
Schoenfeld, Stanley, and J. Skolnik, to Richardson-Merrell Inc. Disposable douche. 235,686, 7–1–75, Cl. D83—1.
Sheeley, David D., to General Motors Corp. Domestic built-in cooktop having smooth cooking surface and touch control panel. 235,605, 7–1–75, Cl. D7—121.
Shell Oil Company: *See*—
Anderson, Victor F. 235,648.
Shimano Industrial Co., Ltd.: *See*—
Shimano, Keizo, and Sato. 235,631.
Shimano, Keizo, and N. Sato, to Shimano Industrial Co., Ltd. Derailleur. 235,631, 7–1–75, Cl. D12—124.
Shure Brothers Inc.: *See*—
Kita, Robert M., and Rusch. 235,658.
Deschamps, Robert L. 235,661.
Mox, Dana W. 235,662.
Simizu, Haruo, and N. Ueda, to Denki Onkyo Co., Ltd. Tape recorder. 235,657, 7–1–75, Cl. D26—14.
Skolnik, Jacob: *See*—
Schoenfeld, Stanley, and Skolnik. 235,686.
Spiegel, Norman, to Nasta Industries, Inc. Toy vehicle. 235,671, 7–1–75, Cl. D34—15.
Stanley Works, The: *See*—
Olson, John D., and Gutowski. 235,613.
Covey, Laird F., and Hildebrandt. 235,626.
Steele, Donald F., and H. P. Thornton, Jr. Optical smoke detector. 235,629, 7–1–75, Cl. D10—106.
Stengel, Fred H.: *See*—
Clement, Carl J., Stengel, and Campbell. 235,655.
Studer, John E., Jr. to Delta Transnational, Inc. Digital clock housing. 235,625, 7–1–75, Cl. D10—1.
Suuronen, Matti J., to Oy Polykem Ab. Enclosure for telephone station or the like. 235,638, 7–1–75, Cl. D13—1.
Swash, Harold. Golf club head. 235,668, 7–1–75, Cl. D34—5.
Takagi, Takeshi: *See*—
Ikejima, Yoritaka, and Takagi. 235,697.
Taylor, James O., to Florida Pneumatic Mfg. Corp. Pneumatic sander. 235,614, 7–1–75, Cl. D8—62.
Tegner, Raymond U. H., to Amerock Corp. Combined escutcheon plate and supporting post. 235,600, 7–1–75, Cl. D6—86.
Tegner, Raymond U. H., to Amerock Corp. Knob. 235,615, 7–1–75, Cl. D8—139.
Tegner, Raymond U. H., to Amerock Corp. Escutcheon. 235,616, 7–1–75, Cl. D8—179.
Tegner, Raymond U. H., to Amerock Corp. Turn for a deadlock 235,617, 7–1–75, Cl. D8—132.
Tegner, Raymond U. H., to Amerock Corp. Thumb piece for an entry lock. 235,618, 7–1–75, Cl. D8—134.
Templin, Wallace D., to Foremost-McKesson, Inc. Plastic container for liquids. 235,624, 7–1–75, Cl. D9—131.
Teranishi, Takeo, to Kabushiki Kaisha TADAPURA. Serving cart for food and the like. 235,636, 7–1–75, Cl. D12—22.
Theodor Mfg. Corp.: *See*—
Barad, Valerie. 235,690.
Barad, Valerie. 235,691.
Thibodeau, Real A.: *See*—
Giguere, Andre N., and Thibodeau. 235,610.
Thornton, Hugh P., Jr.: *See*—
Steele, Donald F., and Thornton. 235,629.
Tibbs, Clarence V., to Balls 'N' All, Inc. Handbag. 235,693, 7–1–75, Cl. D87.
Ueda, Nobuyuki: *See*—
Simizu, Haruo, and Ueda. 235,657.
Witmire, Winnie C. Religious plaque. 235,667, 7–1–75, Cl. D29—23.
World Carpets: *See*—
Hill, Kenneth D. 235,694.
Hill, Kenneth D. 235,695.
Xerox Corp.: *See*—
Clement, Carl J., Stengel, and Campbell. 235,655.
Uchino, Kenju, to Yehan Numata. Digital vernier caliper. 235,627, 7–1–75, Cl. D10—73.
Yehan Numata: *See*—
Uchino, Kenju. 235,627.
Nishigata, Goro. 235,628.
Yoshida, Toshihiko, Y. Hirano, and H. Toyoda, to Matsushita Electric Industrial Co. Mixer. 235,608, 7–1–75, Cl. D7—154.
Ziaylek, Theodore, Jr., to Ziamatic Corp. Bracket for lifesaving equipment. 235,619, 7–1–75, Cl. D8—247.
Ziamatic Corp.: *See*—
Ziaylek, Theodore, Jr. 235,619.
Zimmerman, Wade N. Petcock. 235,643, 7–1–75, Cl. D23—10.

CLASSIFICATION OF PATENTS

ISSUED JULY 1, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2.5 3,891,996
CLASS 3
1 3,891,997
1.91 3,891,998
CLASS 4
185F 3,892,000
CLASS 5
354R 3,892,001
CLASS 8
82 3,892,521
93 3,892,522
94.2 3,892,523
127 3,892,524
165 3,892,525
3,892,526
172 3,892,527
CLASS 15
21D 3,892,002
49C 3,892,003
102 3,892,004
245 3,892,005
250.22 3,892,006
306A 3,892,007
368 3,892,008
CLASS 17
35 3,892,009
62 3,892,010
CLASS 23
230PC 3,892,528
230B 3,892,529
230R 3,892,530
253R 3,892,531
3,892,532
258.5 3,892,533
3,892,534
288FC 3,892,537
288F 3,892,536
288K 3,892,535
295 3,892,538
301SP 3,892,540
301R 3,892,539
CLASS 24
16PB 3,892,011
90E 3,892,013
103 3,892,014
201HH 3,892,015
205.1R 3,892,016
205.11F 3,892,017
CLASS 28
1.2 3,892,019
62 3,892,018
72.12 3,892,020
72.14 3,892,021
CLASS 29
25.42 3,892,023
103B 3,892,022
156.4WL 3,892,028
156.4R 3,892,026
169.5 3,892,025
196.1 3,892,541
200P 3,892,027
420 3,892,030
428 3,892,029
437 3,892,031
455 3,892,032
576 3,892,033
596 3,892,034
CLASS 30
62 3,892,036
140 3,892,024
276 3,892,037
279R 3,892,039
294 3,892,038
CLASS 32
12 3,892,035
40R 3,892,040
CLASS 33
80 3,892,041
143L 3,892,043
301 3,892,042
CLASS 34
6 Re.28,459
20 3,892,044
28 3,892,045
57A 3,892,046
103 3,892,047
133 3,892,048
235 3,892,049
CLASS 35
8R 3,892,050
12N 3,892,051
22R 3,892,053
CLASS 36
44 3,892,077
68 3,892,078
CLASS 37
56 3,892,079
CLASS 40
106.1 3,892,080
214 3,892,081
CLASS 42
11 3,892,082
CLASS 43
43.11 3,892,083
CLASS 46
114 3,892,084
116 3,892,087
180 3,892,085
202 3,892,086
CLASS 48
67 3,892,542
CLASS 49
37 3,892,088
CLASS 51
34D 3,892,089
101R 3,892,090
154 3,892,092
170TL 3,892,091
372 3,892,093
CLASS 52
63 3,892,094
221 3,892,095
227 3,892,096
233 3,892,097
270 3,892,098
479 3,892,099
665 3,892,054
745 3,892,055
3,892,056
CLASS 53
14 3,892,057
21FC 3,892,058
29 3,892,059
127 3,892,060
CLASS 55
96 3,892,543
106 3,892,544
112 3,892,545
129 3,892,546
178 3,892,547
194 3,892,548
267 3,892,549
269 3,892,550
390 3,892,551
CLASS 56
27.5 3,892,061
CLASS 57
34R 3,892,062
56 3,892,063
96 3,892,064
108 3,892,065
CLASS 58
28R 3,892,066
58 3,892,067
86 3,892,068
CLASS 60
226 3,892,069
279 3,892,070
288 3,892,071
487 3,892,072
635 3,892,073
669 3,892,074
CLASS 61
4 3,892,075
35 3,892,076
45B 3,892,101
45R 3,892,100
CLASS 62
6 3,892,102
58 3,892,103
186 3,892,104
353 3,892,105
514 3,892,106
CLASS 64
23 3,892,107
CLASS 66
75 3,892,108
CLASS 68
205R 3,892,109
CLASS 70
107 3,892,110
358 3,892,111
CLASS 71
1 3,892,552
13 3,892,553
92 3,892,554
93 3,892,555
111 3,892,556
CLASS 72
11 3,892,112
250 3,892,113
272 3,892,114
294 3,892,115
305 3,892,116
367 3,892,117
371 3,892,118
385 3,892,119
391 3,892,120
393 3,892,121
453 3,892,122
478 3,892,123
CLASS 73
6 3,892,124
15A 3,892,125
38 3,892,126
61.1R 3,892,127
154 3,892,128
362AR 3,892,281
371 3,892,129
425.4R 3,892,130
432R 3,892,131
457 3,892,132
556 3,892,133
CLASS 74
12 3,892,134
3,892,135
14 3,892,136
99R 3,892,137
110 3,892,138
116 3,892,139
224 3,892,140
475 3,892,141
521 3,892,142
583 3,892,143
805 3,892,144
CLASS 75
.5A 3,892,557
10R 3,892,558
21 3,892,559
23 3,892,560
58 3,892,561
83 3,892,562
97 3,892,563
165 3,892,564
168C 3,892,565
CLASS 81
9.51 3,892,145
52.4R 3,892,146
53.2 3,892,147
57.18 3,892,148
71 3,892,149
179 3,892,150
CLASS 82
4C 3,892,151
CLASS 83
56 3,892,152
100 3,892,153
368 3,892,154
460 3,892,155
469 3,892,156
672 3,892,157
699 3,892,158
CLASS 84
307 3,892,159
CLASS 85
13 3,892,160
CLASS 87
29 3,892,161
CLASS 89
1.815 3,892,162
37C 3,892,163
CLASS 91
378 3,892,164
420 3,892,165
454 3,892,166
497 3,892,167
CLASS 93
93C 3,892,168
CLASS 96
1C 3,892,566
1.1 3,892,567
1.3 3,892,568
67 3,892,569
3,892,570
3,892,573
68 3,892,571
74 3,892,572
84R 3,892,575
100 3,892,576
107 3,892,574
CLASS 98
37 3,892,169
40D 3,892,170
CLASS 99
450.7 3,892,171
458 3,892,172
CLASS 100
117 3,892,173
CLASS 101
35 3,892,174
93.05 3,892,175
116 3,892,176
3,892,177
177 3,892,178
415.1 3,892,179
456 3,892,180
CLASS 102
40 3,892,181
70.2R 3,892,182
CLASS 104
12 3,892,183
147R 3,892,184
148LM 3,892,185
249 3,892,186
CLASS 105
75 3,892,187
368R 3,892,188
CLASS 106
14 3,892,577
16 3,892,578
38.3 3,892,579
41 3,892,580
50 3,892,581
52 3,892,582
55 3,892,583
56 3,892,584
187 3,892,585
200 3,892,586
288B 3,892,587
CLASS 108
109 3,892,189
CLASS 110
8R 3,892,190
49R 3,892,191
CLASS 112
140 3,892,192
200 3,892,193
CLASS 114
20R 3,892,194
235A 3,892,196
235R 3,892,195
CLASS 118
7 3,892,197
49 3,892,198
CLASS 119
5 3,892,199
3,892,200
17 3,892,201
60 3,892,202
99 3,892,203
103 3,892,204
CLASS 122
32 3,892,205
CLASS 123
8.09 3,892,206
32SA 3,892,207
32ST 3,892,221
32R 3,892,208
41.29 3,892,209
90.3 3,892,210
122AB 3,892,212
122AC 3,892,214
122F 3,892,215
122H 3,892,213
122R 3,892,211
127 3,892,218
148E 3,892,219
190E 3,892,220
191S 3,892,216
CLASS 124
1 Re.28,462
7 3,892,217
CLASS 126
9R 3,892,222
200 3,892,223
3,892,224
204 3,892,225
CLASS 128
2F 3,892,226
2.1B 3,892,227
4 3,892,228
24R 3,892,229
25R 3,892,230
80A 3,892,231
92BA 3,892,233
92EB 3,892,232
142 3,892,234
194 3,892,235
214R 3,892,236
216 3,892,237
260 3,892,238
293 3,892,239
325 3,892,241
339 3,892,240
346 3,892,242
359 3,892,243
CLASS 131
2 3,892,244
75 3,892,245
CLASS 132
7 3,892,246
11R 3,892,247
88.7 3,892,248
89 3,892,249
CLASS 134
24 3,892,588
168R 3,892,250
CLASS 135
20R 3,892,251
CLASS 136
6LN 3,892,589
83R 3,892,590
102 3,892,591
120FC 3,892,592
133 3,892,593
148 3,892,594
162 3,892,595
CLASS 137
13 3,892,252
68 3,892,253
116.3 3,892,254
116.5 3,892,255
185 3,892,256
247 3,892,257
461 3,892,258
625.21 3,892,259
625.62 3,892,260
CLASS 138
149 3,892,261
CLASS 139
384B 3,892,262
CLASS 140
147 3,892,263
CLASS 141
5 3,892,264
CLASS 144
230 3,892,265
309AC 3,892,266
CLASS 148
1.5 3,892,596
16.6 3,892,597
31.57 3,892,598
3,892,599
3,892,600
3,892,601
36 3,892,602
108 3,892,603
120 3,892,604
3,892,605
174 3,892,606
186 3,892,607
188 3,892,608
3,892,609
CLASS 149
76 3,892,610
CLASS 150
52G 3,892,267
CLASS 152
172 3,892,268
330 3,892,269
CLASS 156
71 3,892,611
150 3,892,612
210 3,892,613
272 3,892,614
273 3,892,615
352 3,892,616
353 3,892,617
355 3,892,618
382 3,892,619
443 3,892,620
513 3,892,621
CLASS 162
108 3,892,622
120 3,892,623
CLASS 164
252 3,892,271
306 3,892,272
CLASS 165
105 3,892,273
CLASS 166
222 3,892,274
250 3,892,275
251 3,892,270
267 3,892,276
CLASS 169
16 3,892,277
CLASS 172
70 3,892,278
CLASS 173
13 3,892,279
162 3,892,280
CLASS 174
37 3,892,910
59 3,892,911
68C 3,892,912
CLASS 176
50 3,892,625
68 3,892,626
CLASS 178
5.8R 3,892,913
6.7A 3,892,914
21 3,892,915
88 3,892,916
CLASS 179
1GQ 3,892,917
3,892,918
1MN 3,892,921
1SM 3,892,919
1VC 3,892,920
1G 3,892,624
2A 3,892,922

15AT 3,892,925
15BF 3,892,923
15BY 3,892,924
16EA 3,892,926
111R 3,892,927
175.2R 3,892,928
175.3R 3,892,929
179 3,892,930

CLASS 180
6.5 3,892,282
66R 3,892,283
73D 3,892,284
75 3,892,285
77R 3,892,286
115 3,892,287

CLASS 181
156 3,892,288
171 3,892,289

CLASS 182
16 Re.28,455
22 3,892,290

CLASS 184
7E 3,892,291

CLASS 187
17 3,892,292

CLASS 188
71.5 3,892,293
109 3,892,294
111 3,892,295
112 3,892,296
218XL 3,892,297
289 3,892,298

CLASS 191
29R 3,892,299

CLASS 192
2 3,892,300
6R 3,892,301
91A 3,892,302

CLASS 195
1.3 3,892,627
1.7 3,892,628
36R 3,892,629
51R 3,892,630
99 3,892,631
103.5R 3,892,632

CLASS 197
18 3,892,303
3,892,304
52 3,892,305

CLASS 198
192R 3,892,306
195 3,892,307
220CC 3,892,308

CLASS 200
11R 3,892,931
61.27 3,892,932
288 3,892,934
331 3,892,935

CLASS 201
2 3,892,633

CLASS 203
72 3,892,634

CLASS 204
15 3,892,635
35N 3,892,636
37T 3,892,637
43N 3,892,638
105M 3,892,639
149 3,892,640
159.11 3,892,642
159.13 3,892,643
159.22 3,892,641
164 3,892,644
180R 3,892,645
181 3,892,646
3,892,647
3,892,648
3,892,649
192 3,892,650
3,892,651
195R 3,892,652
238 3,892,653

CLASS 206
74 3,892,309
210 3,892,310
229 3,892,311
328 3,892,312
346 3,892,313
363 3,892,314
424 Re.28,460

CLASS 208
8 3,892,654
111 3,892,655
139 3,892,656
3,892,657

CLASS 209
213 3,892,658

CLASS 210
3 3,892,659
12 3,892,660
40 3,892,661
66 3,892,662
80 Re.28,458
169 3,892,663
321 3,892,664
490 3,892,665
520 3,892,666

CLASS 211
71 3,892,315

CLASS 212
46R 3,892,316

CLASS 214
1BC 3,892,317
6A 3,892,318
8.5F 3,892,319
84 3,892,320
86A 3,892,321
131A 3,892,322
505 3,892,323
730 3,892,324

CLASS 215
219 3,892,325
221 3,892,326
253 3,892,327

CLASS 219
10.49 3,892,940
10.79 3,892,938
69P 3,892,936
72 3,892,937
101 3,892,939
113 3,892,941
127 3,892,942
222 3,892,943
270 3,892,944
437 3,892,945
486 3,892,946
522 3,892,947

CLASS 220
21 3,892,328
85VR 3,892,329
86AT 3,892,330
96 3,892,331
219 3,892,332

CLASS 221
200 3,892,333
281 3,892,334

CLASS 222
129.1 3,892,335
193 3,892,336
199 3,892,337
254 3,892,338
318 3,892,339

CLASS 223
1 3,892,340
43 3,892,341
57 3,892,342

CLASS 224
45S 3,892,343

CLASS 226
44 3,892,344
89 3,892,345

CLASS 229
14BE 3,892,346
17R 3,892,347
23R 3,892,348
37R 3,892,349
40 3,892,350
43 3,892,351

CLASS 235
61.11E 3,892,949
3,892,950
61.11R Re.28,461
61.5S 3,892,352
64 3,892,353
91C 3,892,354
101 3,892,355
151.3 3,892,951
151.32 3,892,952
152 3,892,953
153AC 3,892,954
3,892,955
156 3,892,956
3,892,957
3,892,958

CLASS 238
8 3,892,356

CLASS 239
15 3,892,357
265.39 3,892,358
342 3,892,359
345 3,892,360
432 3,892,361
533 3,892,362
590 3,892,363

CLASS 240
1EL 3,892,959
41.35R 3,892,960

CLASS 241
15 3,892,364
92 3,892,365

CLASS 242
7.05B 3,892,366
7.22 3,892,367
55.2 3,892,368
55.53 3,892,369
56A 3,892,012
71.8 3,892,370
152.1 3,892,371

CLASS 243
5 3,892,372

CLASS 244
77A 3,892,373
77D 3,892,374
153R 3,892,375

CLASS 245
6 3,892,376

CLASS 246
62 3,892,377

CLASS 248
71 3,892,378
225 3,892,379

CLASS 249
83 3,892,380

CLASS 250
211K 3,892,961
227 3,892,962
231R 3,892,963
315 3,892,964
316 3,892,965
333 3,892,966
361 3,892,971
389 3,892,968
390 3,892,969
396 3,892,970
447 3,892,967
458 3,892,972
505 3,892,973
568 3,892,974

CLASS 251
26 3,892,381
28 3,892,382
88 3,892,383
282 3,892,384

CLASS 252
8.1 3,892,667
8.55D 3,892,668
8.75 3,892,669
34.7 3,892,670
51.5A 3,892,671
62.1 3,892,672
62.54 3,892,673
96 3,892,674
109 3,892,676
186 3,892,682
301.3W 3,892,675
411S 3,892,677
426 3,892,678
442 3,892,683
476 3,892,679
532 3,892,680
551 3,892,681

CLASS 254
133R 3,892,385
190R 3,892,386

CLASS 256
24 3,892,387

CLASS 259
5 3,892,388
8 3,892,389
192 3,892,390

CLASS 260
2N 3,892,684
2.2R 3,892,688
3,892,689
2.5AC 3,892,687
2.5AM 3,892,691
2.5BB 3,892,685
2.5HA 3,892,690
2.5A 3,892,686
23XA 3,892,692
23.7R 3,892,693
29.2TN 3,892,696
29.6CM 3,892,697
29.6MM 3,892,699
29.6XA 3,892,698
29.6R 3,892,700
3,892,701
3,892,702
3,892,703
29.6S 3,892,704
30.4N 3,892,705
37SB 3,892,707
37N 3,892,708
37R 3,892,706
39R 3,892,709
45.9R 3,892,710
3,892,711
66 3,892,712
75NC 3,892,713
77.5AB 3,892,715
77.5CR 3,892,714
78TF 3,892,716
78.4UA 3,892,718
78.4D 3,892,717
79.3MU 3,892,719
79.5C 3,892,720
80.75 3,892,721
82.1 3,892,722
112.5 3,892,723
3,892,726
140 3,892,724
157 3,892,725
209R 3,892,728
210R 3,892,729
3,892,730
211R 3,892,731
239.3R 3,892,732
240D 3,892,734
240R 3,892,733
243C 3,892,735
3,892,736
3,892,737
243D 3,892,738
243R 3,892,739
3,892,740
246B 3,892,741
246R 3,892,742
247.1H 3,892,744
247.1P 3,892,694
247.1R 3,892,743
247.2A 3,892,745
3,892,746
249.8 3,892,747
251A 3,892,695
268PH 3,892,748
270H 3,892,749
270Q 3,892,750
279R 3,892,751
283CN 3,892,753
283R 3,892,752
287R 3,892,754
3,892,755
289C 3,892,756
293.54 3,892,757
293.57 3,892,758
293.58 3,892,759
294.8G 3,892,761
294.8J 3,892,760
295E 3,892,762
308R 3,892,763
309 3,892,764
309.5 3,892,765
315 3,892,766
3,892,767
326C 3,892,768
326.1 3,892,770
3,892,771
326.13R 3,892,769
326.5B 3,892,772
327TH 3,892,773
332.2A 3,892,774
332.2C 3,892,775
335 3,892,776
340.5 3,892,777
343.2R 3,892,778
345.2 3,892,779
346.1R 3,892,782
3,892,783
346.4 3,892,781
346.8 3,892,780
383 3,892,784
404.5 3,892,785
410.9R 3,892,787
3,892,788
428.5 3,892,789
429R 3,892,790
429.5 3,892,791
448.8R 3,892,792
453P 3,892,793
465.3 3,892,794
468D 3,892,795
468E 3,892,786
468K 3,892,796
471R 3,892,797
475P 3,892,798
501.18 3,892,799
518A 3,892,800
518R 3,892,801
559R 3,892,803
3,892,804
559S 3,892,802
561A 3,892,806
563R Re.28,456
566B 3,892,805
566F 3,892,807
586D 3,892,808
586P 3,892,810
586R 3,892,809
593R 3,892,811
594 3,892,812
597R 3,892,813
617R 3,892,814
649R 3,892,815
659A 3,892,816
666A 3,892,817
676R 3,892,818
836 3,892,819
858 3,892,820
860 3,892,821
875 3,892,822
940 3,892,823
944 3,892,824

CLASS 261
114R 3,892,825

CLASS 264
72 3,892,826
81 3,892,827
89 3,892,828
3,892,829
94 3,892,830
103 3,892,831
109 3,892,832
115 3,892,833
142 3,892,834
332 3,892,835

CLASS 266
2A 3,892,391
32 3,892,392
34L 3,892,393
36P 3,892,394
38 3,892,395
43 3,892,396

CLASS 267
8R 3,892,397
153 3,892,398

CLASS 269
328 3,892,399

CLASS 271
9 3,892,400

CLASS 272
59C 3,892,402
59R 3,892,401
65 3,892,403
79R 3,892,404

CLASS 273
87.2 3,892,405
96B 3,892,406
100 3,892,407
135AB 3,892,408
135AC 3,892,409
145C 3,892,410
155 3,892,411
176AB 3,892,413
176H 3,892,412
185R 3,892,414

CLASS 274
10S 3,892,415

CLASS 277
29 3,892,416
205 3,892,418
207R 3,892,417

CLASS 279
4 3,892,419

CLASS 280
11.35T 3,892,420
3,892,421
3,892,422
36C 3,892,429
106T 3,892,423
124F 3,892,424
150AB 3,892,425
432 3,892,426

CLASS 281
15R 3,892,427

CLASS 282
28R 3,892,428

CLASS 285
31 3,892,430
79 3,892,431
354 Re.28,457

CLASS 289
1.5 3,892,432

CLASS 290
40 3,892,975
52 3,892,433

CLASS 292
247 3,892,434

CLASS 294
16 3,892,435
81SF 3,892,436
93 3,892,437

CLASS 296
1S 3,892,438
137R 3,892,439

CLASS 297
229 3,892,440
461 3,892,441

CLASS 299
11 3,892,442
67 3,892,443

CLASS 303
13 3,892,444
22R 3,892,445

CLASS 307
10AT 3,892,976
77 3,892,977
87 3,892,978
88.3 3,892,979
116 3,892,980
117 3,892,981
118 3,892,982
215 3,893,190
254 3,892,983
279 3,892,984
3,892,985

CLASS 308
36.1 3,892,446
217 3,892,447
230 3,892,448
236 3,892,449

CLASS 310
42 3,892,986
46 3,892,987
50 3,892,988
76 3,893,191

CLASS 312
117 3,892,450
330 3,892,451
3,892,452
351 3,892,453

CLASS 313
59 3,892,989
93 3,892,990
138 3,892,991
318 3,892,993
371 3,892,994
408 3,892,995
413 3,892,996
414 3,892,992
487 3,892,997
3,892,998

CLASS 315
149 3,892,999
159 3,893,000
287 3,893,001
291 3,893,002

CLASS 316
19 3,892,454

CLASS 317
2E 3,893,005
2R 3,893,003
3,893,004
3 3,893,006
9B 3,893,007
27R 3,893,008
43 3,893,009

CLASS 318
636 3,893,010
685 3,893,011
696 3,893,012

CLASS 320
1 3,893,013

CLASS 321
9R 3,893,014
27R 3,893,015
45C 3,893,016

CLASS 323
4 3,893,017
19 3,893,018
3,893,019

CLASS 324
6 3,893,020
3,893,021
41 3,893,022
43R 3,893,023
51 3,893,024
65R 3,893,192
67 3,893,025
72 3,893,026
72.5 3,893,027
115 3,893,028
158MG 3,893,029
181 3,893,030

CLASS 325
32 3,893,031
334 3,893,032

CLASS 328
63 3,893,033
71 3,893,034
146 3,893,035
185 3,893,036

CLASS 330
59 3,893,037
124R 3,893,038

CLASS 331
12 3,893,039
14 3,893,040
45 3,893,041
55 3,893,042
94.5G 3,893,045
3,893,046
94.5H 3,893,044
113R 3,893,043

CLASS 333
30R 3,893,047
3,893,048
84M 3,893,193

CLASS 334
15 3,893,049

CLASS 335
1 3,893,050
151 3,893,051
202 3,893,194
229 3,893,052
254 3,893,053

CLASS 337
37 3,893,054
77 3,892,933
140 3,893,055
283 3,893,056
380 3,893,057

CLASS 338
28 3,893,058
32 3,893,059
132 3,893,195

CLASS 339
14L 3,892,455
40 3,892,456
54 3,892,457
90R 3,892,458
95R 3,892,459
98 3,892,460
111 3,892,461
126 3,892,462
144R 3,892,463
184M 3,892,464

CLASS 340
1R 3,893,060
3D 3,893,076
3E 3,893,061
5R 3,893,062
6R 3,893,063
3,893,064
8MM 3,893,065
15.5GC 3,893,066
46 3,893,067
51 3,893,068
63 3,893,069
146.1AL 3,893,070
3,893,071
3,893,078
146.1BA 3,893,072
146.1R 3,893,077
146.3E 3,893,080
146.3F 3,893,079
147MD 3,893,073
148 3,893,081
149R 3,892,948
166R 3,893,082
171PF 3,893,074
172.5 3,893,075
3,893,083
3,893,084
173R 3,893,085
3,893,086
3,893,087
174TF 3,893,088
188R 3,893,089
213.1 3,893,090
3,893,091
3,893,092
258B 3,893,094
267C 3,893,093
272 3,893,095
283 3,893,096
286 3,893,097
311 3,893,098
323 3,893,099
336 3,893,100
3,893,101
347AD 3,893,104
347CC 3,893,103
347DA 3,893,102
347NT 3,893,105
384E 3,893,106
3,893,107
420 3,893,108

CLASS 343
5EM 3,893,110
5PD 3,893,109
6.5LC 3,893,112
6.5R 3,893,111
7ED 3,893,114
7A 3,893,113
3,893,115
16M 3,893,116
17.1R 3,893,117
106D 3,893,118
108R 3,893,119
119 3,893,120
225 3,893,121
705 3,893,122
706 3,893,123
768 3,893,124
903 3,893,125

CLASS 346
1 3,893,126
3,893,127
74ES 3,893,128
77E 3,893,129
140 3,893,130
3,893,131

CLASS 350
3.5 3,892,465
10 3,892,466
16 3,892,467
96B 3,892,468
150 3,892,469
157 3,892,470
160LC 3,892,471
160R 3,892,472
162R 3,892,473
285 3,892,475
294 3,892,476

CLASS 352
74 3,892,477

CLASS 353
15 3,892,478
117 3,892,479

CLASS 354
13 3,893,132
24 3,893,133
30 3,893,134
50 3,893,140
156 3,893,141
167 3,893,135
173 3,893,136
197 3,893,137
204 3,893,142
258 3,893,143
286 3,893,138
288 3,893,139
293 3,893,144
3,893,145

CLASS 355
3 3,892,480
10 3,892,481
35 3,892,482

CLASS 356
4 3,892,483
96 3,892,484
103 3,892,485
106LR 3,892,486
109 3,892,487
121 3,892,052
153 3,892,488
157 3,892,489
161 3,892,490
168 3,892,491
199 3,892,492
226 3,892,493
239 3,892,494
252 3,892,474

CLASS 357
14 3,893,146
3,893,147
16 3,893,148
17 3,893,149
3,893,150
23 3,893,151
3,893,152
35 3,893,154
38 3,893,153
42 3,893,155
67 3,893,156
69 3,893,157
70 3,893,158
3,893,159
71 3,893,160
81 3,893,161
82 3,893,162

CLASS 358
4 3,893,163
31 3,893,164
65 3,893,174
67 3,893,165
80 3,893,166

CLASS 360
6 3,893,175
16 3,893,167
25 3,893,168
37 3,893,169
42 3,893,170
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72 3,893,177
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77 3,893,180
84 3,893,181
88 3,893,182
93 3,893,183
3,893,184
103 3,893,185
105 3,893,186
115 3,893,187
121 3,893,188
127 3,893,189
132 3,892,727

CLASS 401
65 3,892,495

CLASS 404
117 3,892,496

CLASS 415
1 3,891,999
134 3,892,497
170A 3,892,498
179 3,892,499
219R 3,892,500

CLASS 416
65 3,892,501

CLASS 418
15 3,892,502
61B 3,892,503
68 3,892,504

CLASS 423
213.2 3,892,836
242 3,892,837
253 3,892,838
277 3,892,839
325 3,892,840

CLASS 424
12 3,892,841
22 3,892,842
52 3,892,843
59 3,892,844
62 3,892,845
76 3,892,846
95 3,892,847
115 3,892,848
118 3,892,849
119 3,892,850
157 3,892,851
180 3,892,852
195 3,892,853
200 3,892,854
238 3,892,855
241 3,892,856
3,892,857
246 3,892,858
250 3,892,859
251 3,892,860
273 3,892,861
288 3,892,862
3,892,863
322 3,892,864
325 3,892,865

CLASS 425
41 3,892,505
78 3,892,506
129 3,892,507
135 3,892,508
136 3,892,509
173 3,892,510
251 3,892,512
302B 3,892,513
308 3,892,514
314 3,892,515
443 3,892,516
464 3,892,511

CLASS 426
72 3,892,866
93 3,892,867
94 3,892,868
138 3,892,869
241 3,892,877
250 3,892,872
303 3,892,874
3,892,875
367 3,892,894
534 3,892,878
536 3,892,879
541 3,892,880
573 3,892,870
3,892,871
576 3,892,876
602 3,892,873
3,892,881

CLASS 427
34 3,892,882
3,892,883
36 3,892,884
54 3,892,885
59 3,892,886
121 3,892,887
127 3,892,888
160 3,892,889
249 3,892,890
255 3,892,891
272 3,892,892
352 3,892,893
385 3,892,895
392 3,892,896
463 3,892,897

CLASS 428
40 3,892,900
41 3,892,901
49 3,892,899
99 3,892,902
116 3,892,898
209 3,892,904
220 3,892,905
289 3,892,906
303 3,892,907
329 3,892,908
371 3,892,909
460 3,892,903

CLASS 431
90 3,892,517
168 3,892,518
202 3,892,519

CLASS 432
225 3,892,520

CLASSIFICATION OF DESIGNS

D2—	208	235,590			235,609		71	235,626			235,643		J	235,662			235,681
	278	235,591		135	235,606		73	235,627		50	235,644		L	235,663			235,682
	361	235,589		154	235,608			235,628			235,645			235,665			235,683
D4—	31	235,592		179	235,603		106	235,629		77	235,646	D27—	36	235,666	D57—	1E	235,684
D6—	24	235,595	D8—	62	235,614	D12—	22	235,636		150	235,647	D29—	23A	235,667			235,685
		235,597		72	235,612		43	235,634			235,648	D34—	5GH	235,668	D83—	K	235,687
	30	235,593		86	235,613		63	235,632	D26—	1J	235,651		J	235,669		Q	235,686
	86	235,600		132	235,617		70	235,635		5C	235,652		15AF	235,670		12R	235,688
		235,602		134	235,618		124	235,631			235,654		AJ	235,671	D86—	10H	235,689
	95	235,598		139	235,615		180	235,630			235,655			235,675	D87—	3C	235,693
		235,599		179	235,616		185	235,633			235,656		M	235,672		F	235,690
	113	235,601		247	235,619	D13—	1J	235,637			235,664			235,673			235,691
	154	235,594		263	235,620		L	235,638		R	235,653	D35—	2A	235,674			235,692
	177	235,596	D9—	42	235,623	D19—	13	235,639		14B	235,657	D45—	16B	235,676	D92—	4	235,694
D7—	23	235,611		131	235,624		60	235,649			235,659	D48—	31	235,677			235,695
	88	235,610		219	235,621	D22—	27	235,640			235,660			235,678	D95—	3A	235,696
	97	235,604		235	235,622	D23—.	19	235,641		D	235,658	D56—	4B	235,679			235,697
	121	235,605	D10—	1	235,625			235,642			235,661			235,680	D96—	2	235,698
	128	235,607		62	235,650												

CLASSIFICATION OF PLANTS

P. —	44	3,737	P. —	54	3,736	P. —	86	3,738			

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

28—	72.14	T936,005	58—	50R	T936,004	260~~7~~.5CR		T936,002	343.9	T936,003	635R	T936,001		

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
Alaska 2
American Samoa 3
Arizona 4
Arkansas 5
California 6
Canal Zone 7
Colorado 8
Connecticut 9
Delaware 10
District of Columbia 11
Florida 12
Georgia 13
Guam 14
Hawaii 15
Idaho 16
Illinois 17
Indiana 18
Iowa 19
Kansas 20
Kentucky 21
Louisiana 22
Maine 23
Maryland 24
Massachusetts 25
Michigan 26
Minnesota 27
Mississippi 28
Missouri 29
Montana 30
Nebraska 31
Nevada 32
New Hampshire 33
New Jersey 34
New Mexico 35
New York 36
North Carolina 37
North Dakota 38
Ohio 39
Oklahoma 40
Oregon 41
Pennsylvania 42
Puerto Rico 43
Rhode Island 44
South Carolina 45
South Dakota 46
Tennessee 47
Texas 48
Utah 49
Vermont 50
Virginia 51
Virgin Islands 52
Washington 53
West Virginia 54
Wisconsin 55
Wyoming 56
U.S. Air Force 57
U.S. Army 58
U.S. Navy 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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1 : 3,892,123
3,892,263
3,892,546
3,892,824
3,892,959
3,893,025
4 : 3,892,037
3,892,413
3,892,501
3,892,608
3,892,988
3,893,018
3,893,033
3,893,049
3,893,149
3,893,158
6 : 3,892,029
3,892,039
3,892,060
3,892,066
3,892,086
3,892,091
3,892,102
3,892,117
3,892,139
3,892,173
3,892,181
3,892,182
3,892,185
3,892,194
3,892,200
3,892,207
3,892,208
3,892,218
3,892,219
3,892,232
3,892,234
3,892,253
3,892,255
3,892,258
3,892,270
3,892,283
3,892,288
3,892,295
3,892,299
3,892,346
3,892,355
3,892,367
3,892,408
3,892,409
3,892,412
3,892,414
3,892,423
3,892,427
3,892,438
3,892,442
3,892,456
3,892,458
3,892,464
3,892,466
3,892,469
3,892,470
3,892,481
3,892,487
3,892,498
3,892,511
3,892,512
3,892,559
3,892,588
3,892,595
3,892,609
3,892,644
3,892,655
3,892,658
3,892,686
3,892,694
3,892,724
3,892,775
3,892,785
3,892,786
3,892,813
3,892,836
3,892,877
3,892,906
3,892,915
3,892,925
3,892,958
3,892,963
3,892,964
3,892,967
3,892,971
3,892,989
3,893,012
3,893,029
3,893,040
3,893,041
3,893,060
3,893,073
3,893,075
3,893,094
3,893,105
3,893,107
3,893,116
3,893,131
3,893,157
3,893,167
3,893,169
3,893,173
3,893,176
3,893,178
3,893,185
8 : 3,892,040
3,892,076
3,892,433
3,892,551
3,892,783
3,892,924
3,893,121
3,893,171
9 : 3,892,015
3,892,126
3,892,169
3,892,249
3,892,273
3,892,303
3,892,361
3,892,486
3,892,569
3,892,590
3,892,635
3,892,699
3,892,713
3,892,740
3,892,760
3,892,879
3,892,922
3,893,059
3,893,161
10 : 3,892,731
3,892,796
3,892,905
11 : 3,892,150
12 : Re.28,462
3,892,016
3,892,045
3,892,051
3,892,075
3,892,083
3,892,160
3,892,240
3,892,278
3,892,321
3,892,353
3,892,491
3,892,504
3,892,662
3,892,697
3,892,698
3,892,700
3,892,701
3,892,702
3,892,703
3,892,846
3,892,865
3,892,927
3,892,982
3,892,991
3,893,058
3,893,068
3,893,181
13 : 3,892,072
3,892,243
3,892,311
3,892,587
15 : 3,892,000
3,892,435
16 : 3,892,360
3,893,163
17 : 3,892,022
3,892,041
3,892,084
3,892,087
3,892,092
3,892,093
3,892,119
3,892,145
3,892,171
3,892,187
3,892,190
3,892,199
3,892,235
3,892,238
3,892,247
3,892,272
3,892,306
3,892,319
3,892,324
3,892,337
3,892,350
3,892,363
3,892,399
3,892,422
3,892,426
3,892,447
3,892,453
3,892,534
3,892,549
3,892,618
3,892,627
3,892,656
3,892,657
3,892,665
3,892,672
3,892,682
3,892,683
3,892,721
3,892,815
3,892,828
3,892,832
3,892,848
3,892,855
3,892,868
3,892,869
3,892,873
3,892,909
3,892,928
3,892,929
3,893,024
3,893,056
3,893,091
3,893,097
3,893,098
3,893,130
3,893,146
3,893,172
3,893,182
18 : 3,892,115
3,892,251
3,892,369
3,892,398
3,892,544
3,892,647
3,892,757
3,892,826
19 : 3,892,009
3,892,296
3,892,401
20 : 3,892,203
3,892,654
21 : 3,892,304
3,892,307
3,892,308
3,892,552
3,893,081
22 : Re.28,457
3,892,275
3,892,364
24 : 3,892,053
3,892,359
3,892,410
3,892,579
3,892,696
3,892,781
3,892,966
3,893,039
3,893,042
3,893,048
3,893,061
3,893,110
3,893,147
3,893,152
25 : 3,892,036
3,892,078
3,892,089
3,892,130
3,892,133
3,892,136
3,892,159
3,892,162
3,892,188
3,892,189
3,892,281
3,892,381
3,892,446
3,892,454
3,892,477
3,892,603
3,892,652
3,892,673
3,892,778
3,892,782
3,892,839
3,892,847
3,892,885
3,892,920
3,892,949
3,892,950
3,893,015
3,893,054
3,893,055
3,893,072
3,893,084
3,893,108
3,893,132
26 : 3,892,002
3,892,026

3,892,095
3,892,137
3,892,213
3,892,214
3,892,215
3,892,216
3,892,223
3,892,224
3,892,256
3,892,297
3,892,298
3,892,347
3,892,390
3,892,393
3,892,419
3,892,444
3,892,451
3,892,710
3,892,711
3,892,729
3,892,730
3,892,743
3,892,763
3,892,792
3,892,795
3,892,843
3,892,947
3,892,981
27 : 3,892,003
3,892,008
3,892,172
3,892,259
3,892,315
3,892,345
3,892,370
3,892,383
3,892,385
3,892,503
3,892,533
3,892,908
3,893,095
3,893,122
3,893,180
3,893,190
28 : 3,892,049
3,892,617
29 : 3,892,042
3,892,204
3,892,417
3,892,450
3,892,461
3,892,881
3,892,935
3,893,092
31 : 3,892,001
32 : 3,892,336
3,892,418
3,893,145
33 : 3,892,267
3,893,100
34 : Re.28,456
Re.28,461
3,892,011
3,892,127
3,892,191
3,892,231
3,892,257
3,892,290
3,892,329
3,892,368
3,892,372
3,892,373
3,892,432
3,892,455

3,892,460
3,892,489
3,892,530
3,892,531
3,892,532
3,892,538
3,892,539
3,892,553
3,892,565
3,892,615
3,892,631
3,892,638
3,892,653
3,892,659
3,892,667
3,892,671
3,892,676
3,892,690
3,892,692
3,892,718
3,892,726
3,892,739
3,892,744
3,892,751
3,892,752
3,892,758
3,892,761
3,892,766
3,892,767
3,892,769
3,892,771
3,892,772
3,892,777
3,892,779
3,892,787
3,892,801
3,892,812
3,892,822
3,892,845
3,892,856
3,892,857
3,892,859
3,892,860
3,892,862
3,892,863
3,892,878
3,892,891
3,892,892
3,892,910
3,892,926
3,892,972
3,892,973
3,892,986
3,892,997
3,893,008
3,893,034
3,893,101
3,893,102
3,893,103
3,893,127
3,893,159
3,893,168
3,893,191
35 : 3,892,529
3,892,563
3,892,970
3,893,115
36 : Re.28,460
3,892,013
3,892,014
3,892,050
3,892,088
3,892,118
3,892,161

3,892,180
3,892,192
3,892,241
3,892,279
3,892,301
3,892,305
3,892,326
3,892,333
3,892,388
3,892,396
3,892,400
3,892,404
3,892,411
3,892,468
3,892,472
3,892,482
3,892,537
3,892,541
3,892,567
3,892,570
3,892,578
3,892,580
3,892,582
3,892,589
3,892,598
3,892,599
3,892,600
3,892,601
3,892,606
3,892,646
3,892,650
3,892,651
3,892,669
3,892,716
3,892,788
3,892,800
3,892,810
3,892,841
3,892,851
3,892,871
3,892,897
3,892,899
3,892,902
3,892,945
3,892,962
3,892,979
3,893,000
3,893,022
3,893,044
3,893,065
3,893,070
3,893,071
3,893,079
3,893,080
3,893,085
3,893,087
3,893,089
3,893,096
3,893,124
3,893,156
3,893,175
3,893,188
37 : 3,891,996
3,892,061
3,892,157
3,892,197
3,892,245
3,892,436
3,892,867
3,892,888
3,892,956
3,893,005
3,893,069
3,893,144

38 : 3,892,378
39 : Re.28,455
Re.28,458
3,892,030
3,892,048
3,892,105
3,892,134
3,892,135
3,892,141
3,892,186
3,892,226
3,892,252
3,892,261
3,892,291
3,892,309
3,892,351
3,892,357
3,892,358
3,892,366
3,892,440
3,892,449
3,892,478
3,892,485
3,892,488
3,892,510
3,892,597
3,892,612
3,892,616
3,892,632
3,892,681
3,892,684
3,892,691
3,892,693
3,892,720
3,892,741
3,892,776
3,892,794
3,892,829
3,892,901
3,892,976
3,892,990
3,893,006
3,893,037
40 : 3,892,007
3,892,056
3,892,080
3,892,154
3,892,387
3,892,517
3,892,519
3,892,830
3,892,834
41 : 3,892,006
3,892,229
3,892,334
3,892,356
3,892,434
3,892,620
3,893,027
3,893,036
42 : Re.28,459
3,892,017
3,892,031
3,892,074
3,892,090
3,892,094
3,892,100
3,892,104
3,892,112
3,892,124
3,892,156
3,892,168
3,892,170
3,892,227

3,892,236
3,892,246
3,892,277
3,892,282
3,892,286
3,892,294
3,892,300
3,892,312
3,892,325
3,892,340
3,892,377
3,892,382
3,892,384
3,892,394
3,892,407
3,892,441
3,892,443
3,892,457
3,892,459
3,892,462
3,892,463
3,892,467
3,892,497
3,892,500
3,892,523
3,892,562
3,892,581
3,892,602
3,892,604
3,892,605
3,892,614
3,892,648
3,892,649
3,892,687
3,892,723
3,892,738
3,892,746
3,892,762
3,892,768
3,892,803
3,892,804
3,892,858
3,892,903
3,892,931
3,892,934
3,892,954
3,892,975
3,892,977
3,892,978
3,892,996
3,893,050
3,893,052
3,893,090
3,893,148
3,893,153
3,893,165
43 : 3,892,452
44 : 3,892,149
3,893,076
45 : 3,892,109
3,892,183
3,892,371
3,892,613
46 : 3,892,202
47 : 3,892,054
3,892,248
3,892,341
3,892,516
48 : 3,892,128
3,892,148
3,892,196
3,892,274
3,892,276
3,892,287

3,892,320
3,892,335
3,892,403
3,892,405
3,892,528
3,892,634
3,892,668
3,892,670
3,892,679
3,892,705
3,892,811
3,892,816
3,892,819
3,892,853
3,892,913
3,892,957
3,893,017
3,893,019
3,893,020
3,893,021
3,893,063
3,893,066
3,893,088
3,893,093
3,893,112
3,893,123
49 : 3,892,038
3,892,331
3,892,628
3,892,980
50 : 3,892,343
51 : 3,892,027
3,892,052
3,892,070
3,892,167
3,892,230
3,892,314
3,892,402
3,892,476
3,892,525
3,892,526
3,892,969
3,892,987
3,893,003
3,893,004
3,893,051
53 : 3,892,121
3,892,220
3,892,265
3,892,330
3,892,374
3,892,386
3,892,625
3,892,974
3,893,031
3,893,099
3,893,106
3,893,111
54 : 3,892,431
3,892,610
3,892,821
55 : 3,892,081
3,892,142
3,892,155
3,892,222
3,892,254
3,892,264
3,892,289
3,892,506
3,892,547
3,892,622
3,892,666
3,892,930

12	:	3,737	51	:	3,738						

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

9	:	T936,004	18	:	T936,001	22	:	T936,002	48	:	T936,003

DESIGN PATENTS

4	:	235,674	9	:	235,602	18	:	235,647			235,653		235,603	235,593
5	:	235,589			235,613	20	:	235,622			235,656		235,611	235,619
6	:	235,597			235,626	22	:	235,639	32	:	235,633		235,623	235,624
		235,601			235,682	25	:	235,629	34	:	235,592		235,640	44 : 235,641
		235,612	12	:	235,614			235,654			235,625		235,645	235,642
		235,643	13	:	235,694			235,696			235,648		235,660	47 : 235,693
		235,644			235,695	26	:	235,605			235,672		235,671	48 : 235,635
		235,646	17	:	235,596			235,606			235,673		235,686	51 : 235,688
		235,655			235,598			235,637			235,675	37	: 235,652	55 : 235,600
		235,677			235,658			235,650			235,676		235,664	235,615
		235,678			235,661			235,669			235,689	39	: 235,621	235,616
		235,690			235,662			235,698	35	:	235,667		235,634	235,617
		235,691			235,670	27	:	235,620	36	:	235,594	40	: 235,692	235,618
8	:	235,685			235,687			235,632			235,599	42	: 235,591	

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U.S. DEPARTMENT OF COMMERCE
Rogers C. B. Morton, *Secretary*

PATENT AND TRADEMARK OFFICE
C. Marshall Dann, *Commissioner*